CB ELECTRONICS

Loddonside, Lands End House, Beggars Hill Road, Charvil, Berks RG10 0UD, UK
Tel: +44 (0)118 9320345, Fax: +44 (0)118 9320346, www.colinbroad.com

SR/MR Serial Remotes/Synchronizers
User Manual

* Multiple serial ports . . . . . SR-3: 3 Output, 1 Input; SR-4: 4 Output, SR-24A 5 Output
* Multiple serial ports . . . . . SR-24: 4 Output; SR-24A: 4 Output, 1 Output/Input, 1 Input
* Sony P2 protocol . . . . . DAT's, VTR's, DA-88, FEG Prima ..
* P2 Plug and Play . . . . . Sony P2 Auto recognition and Configuration
* ES BUS protocol . . . . . Studer D820/D827, AK ES 1.11
* Studer TLS4000 protocol . . . . . Studer Audio Tape Recorders
* Ampex Protocol . . . . . VPR-3, VPR-80, Timeline Lynx
* 8(SR-3/4) or 24(SR-24) Record Ready keys . . . . . Up to 48 record Channels
* RS422 Input . . . . . On SR-3 and SR-24 for use with DAW or Video Editors
* Parallel In/Out . . . . . 6 parallel inputs, 6 parallel outputs
* Parallel Remote with tallies (SR-24) . . . . . SSL S29 format
* Timecode Output . . . . . Follows the master position and Offset
* Timecode Input . . . . . All outputs will chase remote code
* Built in P2 Synchroniser . . . . . Will synchronise any suitable 9-pin Machine
* Real or Virtual Master . . . . . Perfect Machine as Master, Tapeless Master
* 11 (SR-3/4) or 15(SR-24) Macro Keys . . . . . User configurable

The SR Series remote controls have been designed using experience gained from the MR series remote control system. Designed as a stand-alone controller or to be used with Digital Audio Work-stations the SR serial remotes make cost effective ergonomic solutions.

Although the user can control only one machine at a time from the remote both the record and un-record commands are global so that multiple machines may be controlled simultaneously using the **internal** 9-pin synchroniser or using the built in chase feature of modern machines.

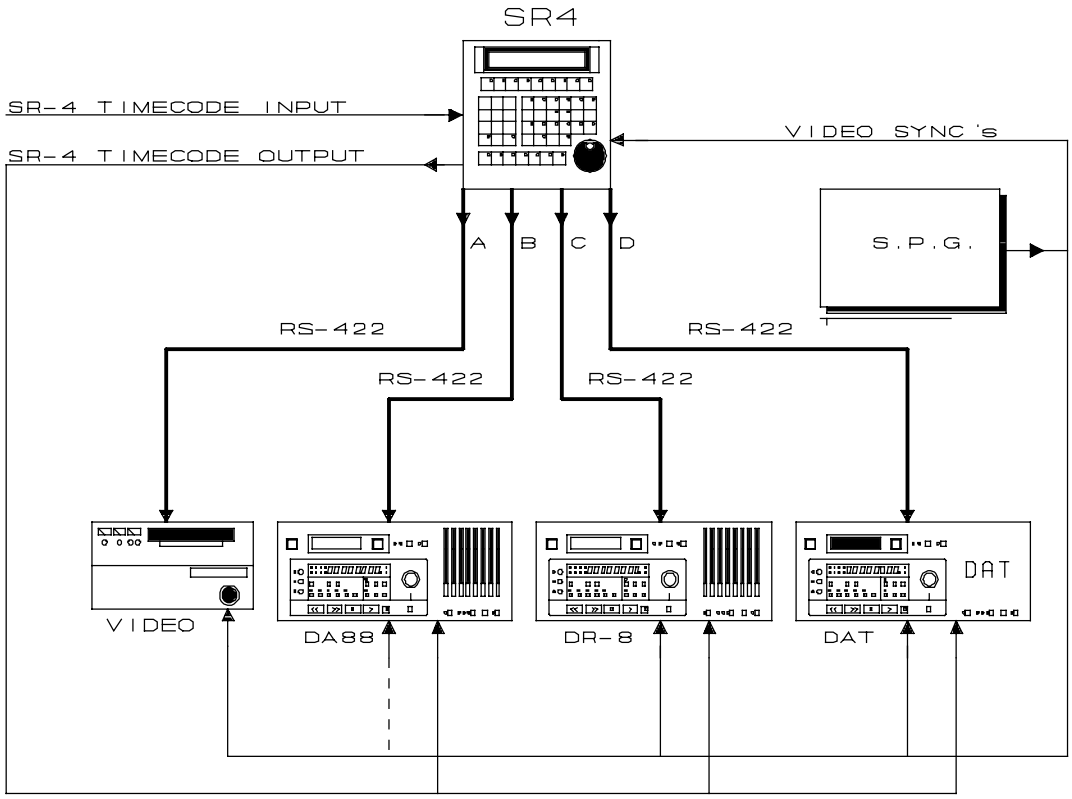
SR-3
The SR-3 may be used with a Digital Audio Work-station or Video Editor to provide control of up to 3 machines from one serial port. The DAW controls the selected master machine; the timecode output follows the selected master. The record tracks are mapped so that the Serial input may have up to 64 record tracks. The timecode input enables the SR-3 to act as a timecode to serial converter.

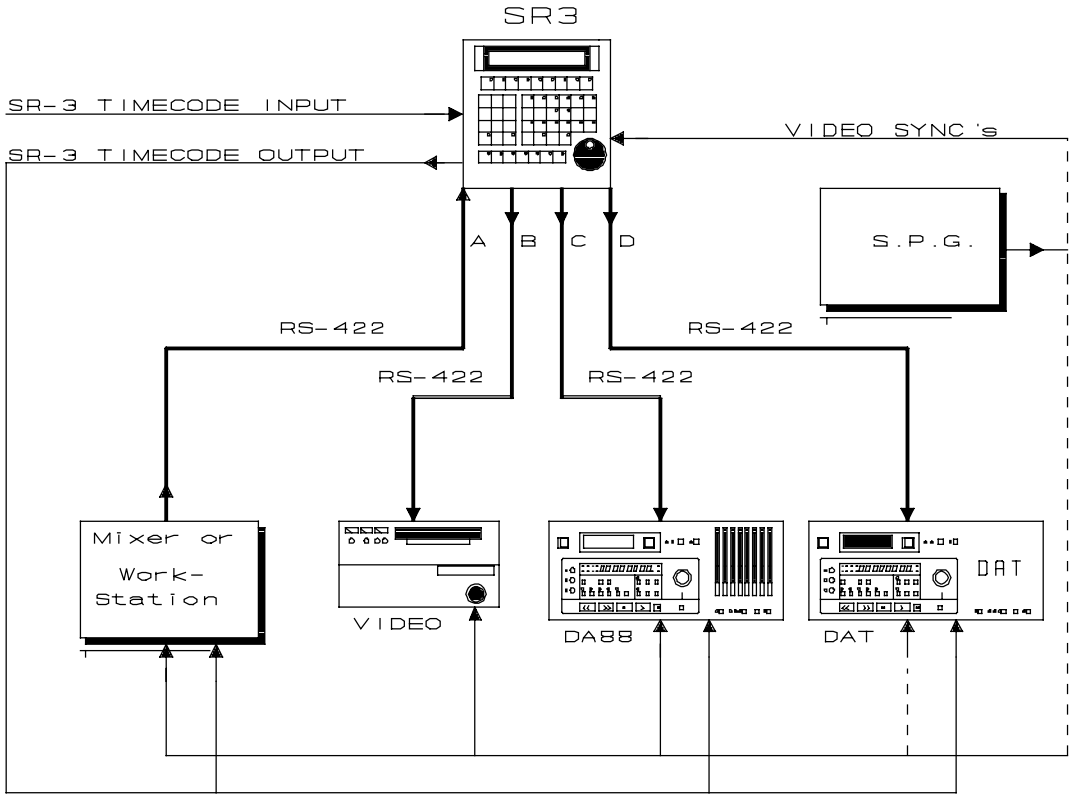
SR-24
The SR-24 separates the keyboard from the electronics and display. The keyboard supports 24 record enable keys these may be mapped to one or multiple machines. A 24 character LED display built into the keyboard is used to display the currently selected machine and the current keyboard entry.

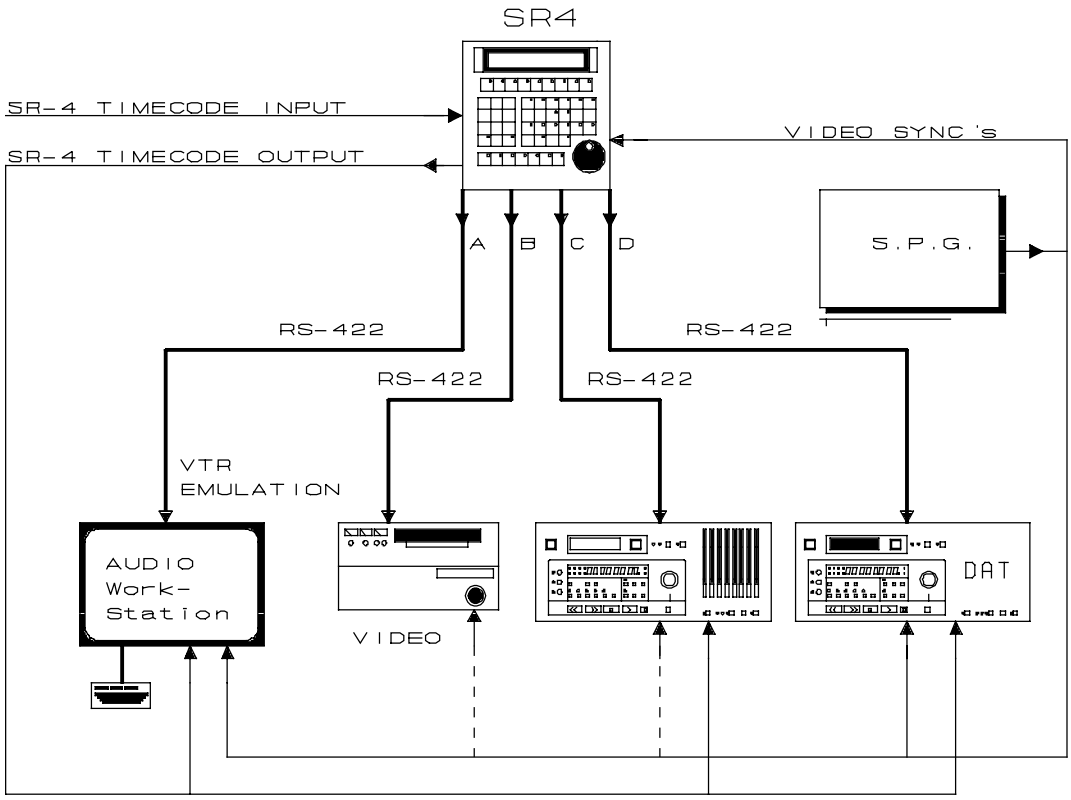
PARALLEL INPUT/OUTPUT
There are 6 CMOS parallel inputs and 6 TTL parallel outputs provided. Currently used as machine control and tallies and General Purpose Trigger Outputs.

RECORD ENABLE
8(SR-3/4) or 24(SR-24) record ready switches and a bank switch are provided, these are switched with the machine selects and provide access to up to 48 tracks on each machine.

MACRO KEYS
Any of the 100+ user functions provided may be assigned to one of the 9 macro keys. The user functions include Dat specific functions such as PNO renumber, id write, id read. Video specific commands such as assemble or insert, ADR keys (Next Loop, Prev Loop, Join, Insert), or system commands such as instant replay, instant record, Mark. Continual user feedback ensures that more functions are provided on a regular basis.


SR4
SR-4 TIMECODE INPUT
SR-4 TIMECODE OUTPUT
VIDEO SYNC's
A
B
C
D
S.P.G.
RS-422
RS-422
RS-422
RS-422
VIDEO
DA88
DR-8
DAT
DAT


SR3
SR-3 TIMECODE INPUT
SR-3 TIMECODE OUTPUT
VIDEO SYNC's
A
B
C
D
S.P.G.
RS-422
RS-422
RS-422
RS-422
Mixer or
Work-
Station
VIDEO
DA88
DAT
DAT


SR4
SR-4 TIMECODE INPUT
SR-4 TIMECODE OUTPUT
VIDEO SYNC's
A
B
C
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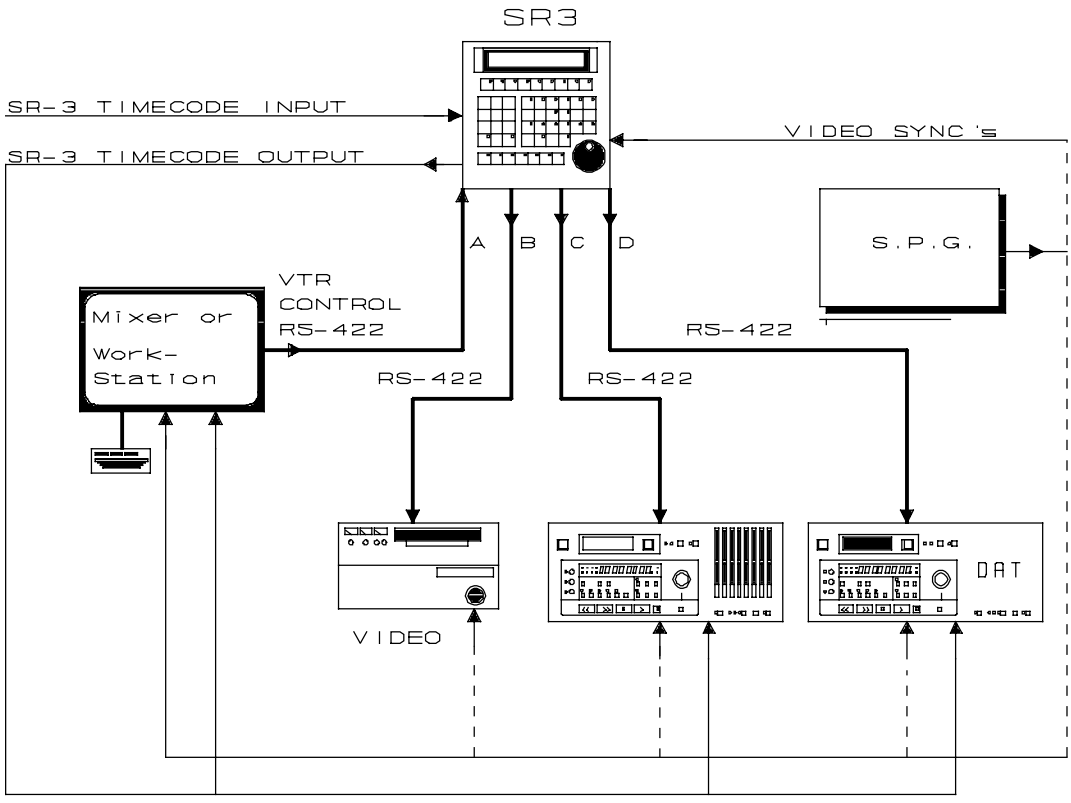
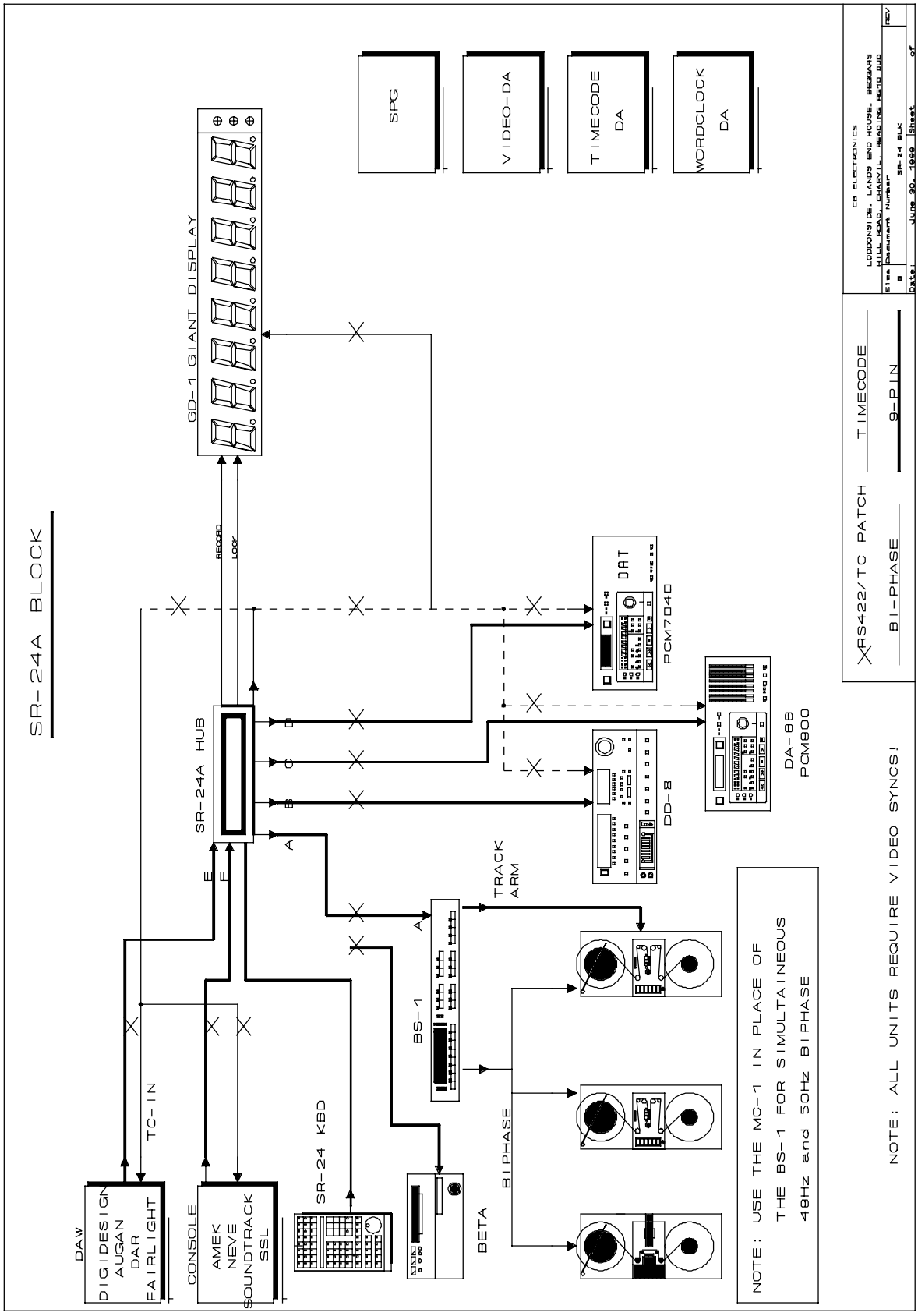
S.P.G.
RS-422
RS-422
RS-422
RS-422
VTR
EMULATION
AUDIO
Work-
Station
VIDEO
DAT


SR3
SR-3 TIMECODE INPUT
SR-3 TIMECODE OUTPUT
VIDEO SYNC's
A
B
C
D
S.P.G.
VTR
CONTROL
RS-422
Mixer or
Work-
Station
RS-422
RS-422
RS-422
VIDEO
DAT


SR-24A BLOCK
GD-1 GIANT DISPLAY
SPG
VIDEO-DA
TIMECODE DA
WORDCLOCK DA
SR-24A HUB
DAT
PCM7040
DD-8
DA-88 PCM800
TRACK ARM
BS-1
BETA
BIPHASE
SR-24 KBD
TC-IN
DAW
DIGIDESIGN AUGAN DAR FAIRLIGHT
CONSOLE
AMEK NEVE SOUNDTRACK SSL
RS422/TC PATCH
TIMECODE
BI-PHASE
9-PIN
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NOTE: ALL UNITS REQUIRE VIDEO SYNCS!

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0.00 QUICK START, HOW TO & UPDATES

Thankyou for buying a CB synchroniser we hope its works as well for you as is has for all our other customers. If you have any questions or suggestions please contact us by email **support@colinbroad.com**.

To Control individual machines
Connect the machines to ports A-D on the SR-4 or Sr-24 or ports B-D on the SR-3 using standard 9 pin cables (SR-Tech T5.03). If you wish to connect a machine to port E on the SR-24 you will need a Tx-Rx invert cable (SR-Tech T5.04).

Connect video syncs to the SR/MR Hub and to all machines, the system will not operate correctly without video syncs. Audio machines may be used as slaves with wordclock and master timecode instead of video syncs, the Rosendahl nanosyncs is a good solution to generate both wordclock and video syncs or wordclock from video syncs.

For most installations the controller will now recognise all the machines connected and automatically configured to the connected machines. To select a machine use one of the green keys labelled A..D. The name and current position of each machine will be displayed on the left of the LCD display. If the incorrect name is displayed then the SR/MR will not auto configure correctly. Check the actual machine setup is correct as some machines (DA-88, DA-98, DA-60, Pro-Tools...) have selectable ID, Section T4. in the Sr-tech manual will help with the machine setup if we have information on the machine.

You should now be able to control each machine individually, to check the locate enter a valid timecode number (you will see the number in the lower right of the display) and then depress the locate key The selected machine will locate to the point or to pre-roll before the point. In doing this you have learnt one of the main principles of operation, enter the number first then the action key. Also notice that the action (locate) is confirmed in the keyboard display.

You can now record enable any machine as described below and track arm, As machines are record enabled and armed they will be displayed above the keyboard display. If you are brave you can record onto the machine as well. Press play, wait for the lock tally and then depress the record key to enter record, use the play key to exit from record.

To Control multiple machines
Connect the SR/MR timecode output to any machines that have built in synchronisers, and to any outboard equipment that needs a timecode feed (Best to use a distribution amp). Connect timecode to the desk for automation, you may need to use the separate locked play timecode output for this. You now need to learn some new terms.

Master Machine: When controlling a group of machines the commands are sent directly to the Master Machine. Normally the video machine is used as the master for fine control when jogging.

Perfect Machine/Virtual Master: The timecode generator when used as the Master machine, called perfect as there are no timecode dropouts and locates are instantaneous.

Slave/chase Machines: These machines follow/chase the master machine, the only user commands sent directly to these machines are record, track arming and offset.

Offset: The positional difference between the master position and required slave normally 00:00:00:00 if the time-codes are identical.

Master Positon + Master Ofset = Slave Position + Slave Offset

Difference: The difference between the slave machine position and required position incuding the offset.

Refer to Section 1. of this manual for a details on how to setup a multiple machine system.

0.01 ONE FINGER TYPIST: STICKY KEYS

The following keys on the SR are designed for 'One Finger Operation '**Recall**' '**Store**', **Trim +**, '**Trim**

-, and '**Shift**'. They should be depressed first and then whilst the LED is lit (Approximately 5 seconds) indicating that the function is active the next key should be depressed.

0.02 INSTALLING NEW SOFTWARE

When new software is fitted always install the Factory Default parameters by selecting **Root | Unit | Generic | Menu 30: Macro Protection** and select 2=Factory Default.

0.03 RECORD ENABLE

It is not possible to arm a track on a machine from the SR unless machine is record enabled. After Hard Reset all machines are disabled.

CHECKING MACHINE RECORD ENABLE

The machines record enable status may be checked from **STOP** by holding the [**Record**] key depressed, the four (five on the SR-24) machine select keys [**A**, **B**, **C**, **D**, (**E**)] LED's will then indicate the record enable status. The Record Enable Status of the machines may also be displayed in the upper right of the display.

CHANGING MACHINE RECORD ENABLE

The record enable status of individual machines may be changed in **STOP** by depressing the machine select keys [**A**, **B**, **C**, **D**, (**E**)] whilst holding down the [**Record**] key. The current selected machines Record Enable may be changed by using **[Shift]** followed by **[Record]**. A Record Enable macro key (Macro 143) is also available.

REHEARSE

Note: When Rehearse is enabled the [**Record**] key becomes a Rehearse on key.

RECORD/EDIT ON

To send a record command the machine must be in **PLAY,** then depress the **RECORD** key.

RECORD TRACK SELECT

To check which machine/track a track enable key is pointing to, use **RECALL** followed by the track enable key.

VIDEO MACHINE ENABLE

The Analogue track selects and Video track selects have a second level of protection located in the **SETUP** menu under **Root | IFace | Record | Menu 41: Analog and Video Record Rdy**.

RECORD INHIBIT

The system will inform you if the record inhibit is set on a tape. Some machines also have a record inhibit on their serial port or have user selectable track mapping (DA-88, DR-8, DD-8!) .

0.04 SWITCH 'A' on the SR-3 or 'E' on the SR-24

On the SR-3 port **A** is used as a control input to the SR-3. you may Enable/Disable the remote control input using the [**A**] key, External control is enabled when the [**A**] LED is ON (This has changed it was originally On for Disable).

0.05 MASTER CHASE

Depressing the **CHASE** key when the master is selected will send chase on/off commands to all machines that are group chase enabled. Selecting a machine and enabling/disabling chase will enable/disable the chase group status.

0.06 MACHINE REFERENCE: VIDEO SYNCS or WORD-CLOCK

In all digital environments it is preferred to lock machines to Word Clock and not video syncs. In this case it may not be possible to use RS-422 only to slave machines. In this case it is recommended that the machines internal synchroniser be used to chase a master timecode feed.

Note. The SR-3/4 always requires video syncs.

0.07 USING THE GENERATOR AS A MASTER

The key **GEN** (Macro 118) enables the Generator, the generator is always slaved to the current

master machine. To enable the generator as a master use **SHIFT** followed by **GEN** in the normal way.

0.08 CRASH RECORD

To perform a crash record on one or more machines the following conditions must be met

1) The machine must be record enabled.
2) **Menu 41:- Analogue and Video Rec. Rdy** must be set to **3=Asmb** on each machine.
3) The machine must be in **STOP**
4) Arm track 8(Crash) in the **AV+ASMB** bank
5) **Setup | Root | Unit | Record | Menu 3:- Initial Record command** must be set to 0= Record

Depress the Record key and the Play key (Record first) to send a crash record command to all record & assemble enabled machines.

The Machines internal Generator will be preset to the machine Record in Time.

note: If the current selected machine is in play then any machine that is in play, track armed and record enabled will go into record when the record key is depressed.

0.09 USING THE SR-3 WITH A DAW

Any DAW that can control a Video Machine via RS422 may be used wit the SR-3 to control up to 3 machines. The SR-3 may also be used as a timecode and RS4-22 switcher for the DAW.

The serial control cable normally connected to the video machine should be connected to Port-A on the SR-3. The timecode input on the DAW (if required) should be connected to the timecode output on the SR-3.

The [**A**] switch on the SR-3 is used as a local remote switch, in order for the DAW to control the system the [**A**] LED should be **ON**. The DAW will directly control the current SR-3 master, to define the master use **Shift** followed by the machine key (**B, C, D or E)**.

0.10 CONVERTING SR-4 -> SR-3

To change the direction of Port-A (SR-4/3) or Port-E (SR-24) from Output to input:-

1) Setup **Root | Unit | Generic | Menu 31: Serial A type** (alternatvly use [3] [1] [Recall] [Setup]) and select Serial A type 1= I/P (SR-3).
2) Either use a TX-Rx invert cable to connect to port A, or Change the 4 internal links on Port A to be parallel to the back panel as per the diagram at the end of this manual.

Once configured as an input the following changes are made to the unit.

1) The controller connected to port A will control the currently selected master (B, C, D).
2) Key [A] will become a local Switch, when the LED is illuminated this will enable control from port A.

0.11 Setting the Pre-Roll, Start Time, Loop Delay, Post-Roll, Record Advance and End Time

To Set the Pre-Roll, type in the required pre-roll, then press **Store** followed by **Reverse Play (<)**.
To check the Pre-Roll depress **Recall** Followed by **Reverse Play (<)**.
To Clear the Pre-Roll, Clear the keyboard display (**0** or **Shift** followed by **0**)

The Pre-Roll is used with **Locate** when using multiple machines to allow time for the slave machines to lock. To locate without Pre-Roll use **Shift** followed by **Locate**.

Start Time use the **Rewind (<<)** key instead of the Reverse Play key.

The Start time is particularly useful when using open reel or film machines, in rewind when the tape is within approximately 1 minute of the start time a locate to start time command will be issued to the machine.

Loop Delay use the **Stop** key.
Post Roll use the **Play** key.
Record Advance use the **Record** Key.
End use the **Forward Wind (>>)** key.

1.00 Multi-Machine Synchronizer Set Up

The SR/MR series of synchronizers offer two forms of synchronisation using either the SR/MR synchronizer or where available the machine's built in synchronizer. The user interface is identical. The decision "which type of synchronisation to use" depends on the users requirements and the technical details of the machine and the installation.

When a new machine is connected the a system parameter (**Unit | Chase | Menu 17 System Chase Type**) determines which type of synchroniser to use if there is a choice. Once connected the user is free to change the synchroniser type. The user selection will only be changed after a hard reset or if the machine connected to the port is changed.

1.01 The SR-4 as a multi-machine synchroniser

Please ensure that you have a copy of the drawing **SR-4 Block / SR-3 Block** whist reading this section. The SR-4 may be used as a 4 machine remote control only, however because control of both offset and chase are included the SR-four may be used as a 4 machine synchroniser. One machine, the timecode reader, or the timecode generator may be chosen as the master. The remaining machines will slave to the selected master.

For serial controlled machines a single SR-4 can replace five Timeline Lynx II modules and a KCU controller. Where parallel controlled machines are used your existing Timeline Lynx I/II, AK ES-1.11, Studer TLS4000, or AS Zeta 3 synchroniser module may be used with the SR-4.

1.02 SR-4 BLOCK / SR-3 BLOCK

This diagram shows a typical SR-4 installation, the four machines may be any selection of 9-pin controlled machines. Note the Video Reference is sent to all machines.

1.03 SR-4 TIMECODE OUTPUT

The SR-4 timecode output follows the position of the selected master machine (including the SR-4 timecode input). The timecode generator position is calculated as follows:- [Timecode Output] = [Master Position] - [Master Offset]. Including the master offset in the calculation allows the user to change the master without having to update all the slave offsets.

The timecode generator output is also used in the perfect machine mode to provide a timecode master in a tapeless studio.

1.04 SR-4 TIMECODE INPUT

The SR-4 timecode input may be used as a remote timecode master. All four machines may be slaved to this timecode source. In order to use the SR-4 timecode input a macro key must be used to display the timecode (Macro 113).

1.10 Setting up the System

1.11 Defining the Master

Any machine on the system may be defined as the master including the generator or the reader. The master machine is defined using [**Shift**] followed by a machine key (**A, B, C, D, E (SR-24)**), [**Reader**] or [**Generator**]. Once the master has been defined and offsets set for all the slaves the master machine may be changed as required. Note: on MR systems only machines controlled directly by the controller may be defined as a master machine and not machines controlled by the MR-3's.

The master of a multi-machine system is the machine to which all commands are sent. The other chase enabled machines then follow the selected master.

The master is the machine over which the user has direct control. Each user has his own reasons for selecting a particular machine as master, here are some:-

1) Film because it is the slowest.
2) Video so that the user can jog the picture directly.

3) The record machine so that it is first to lock.
4) A machine that slaves badly or not at all.
5) The Generator as a "Perfect Machine".
6) The Reader where the master is not directly controlled.

The system will only operate correctly if the selected master is resolved (locked) to video syncs.

Note. When configured as a SR-3, where [**A**] is an input ([**E**] on the SR-24) [**A**] should never be defined as the master. This is an input and not an output. Any controller connected to this input will control the selected master machine.

Perfect Master Mode

The timecode generator may be selected as the master (**Shift** followed by **Gen** (Macro 118)) to enter the perfect machine mode. The generator may be used as a timecode master in a tapeless studio. To set the value of the timecode generator use the Locate/Shift Locate command.

Remote Master Mode

The timecode reader may be selected as the master (**[Shift]** followed by **[Reader]**. This is used when you have a remote source of code only. Not the code should be resolved to the same video reference as the studio. The SR keyboard may be used as a parallel remote control. To do this select **Setup | Root | Unit | Generic | Menu 33: GP Outputs 4, 5, 6** and choosing **5=RdrCmd** (See section 7.026). Connecting a suitable parallel interface GPI outputs 4, 5, 6 will enable the SR/MR to control the source of the external timecode.

Note: The Remote timecode MUST be locked to video syncs in order to work correctly.

1.12 SR/MR Timecode Generator Output

The SR/MR timecode generator is an integral part of the synchronization system. The timecode value follows the position of the selected master machine (including the timecode reader). If Group Locates are enabled (**Setup | Root | Unit | Chase | Menu 19; Group locates**), the timecode generator will jump to the Locate point allowing chase machines to locate individually. The timecode generator output will roll over any drop-outs in the machine timecode.

By using the timecode generator output chase only machines may be connected to the system for playback.

The timecode generator value is calculated as follows:- [Timecode Output] = [Master Position] - [Master Offset]. Including the Master Offset in the calculation allows the user to change the master without having to update the slave offsets, or change the settings for any other units connected to the SR-4 timecode output (Automation, Midi, Chase only slaves...).

1.13 Defining a Machine as a Slave

A machine may be selected to be a slave by selecting the machine (**A, B, C, D or E**) and using [**Chase/Offset**] or [**Shift**] followed by [**Chase/Offset**]. When the **[Shift]** key is used the current Master and Slave Positions are used to calculate the Slave Offset.

1.14 Displaying the Chase Group

When any machine in the chase group is selected then the LED's of all the machines within the group are illuminated. The selected master machine's LED will flash.

1.15 Entering an Offset

To enter an offset, first select the machine (**A, B, C, D or E**) then type in the offset required, this will be displayed on the lower right hand display. Then use the **Store** key followed by the **Chase/Offset** key. The display will confirm by displaying offset next to the displayed number.

1.16 Trimming an Offset

To trim an offset (or any other memory) first enter the amount of trim required, this will be displayed on the right of the lower line. Then use the **Trim+** or **Trim-** key followed by the **Chase/Offset** key. The display will confirm by displaying the new offset.

1.17 Entering a Negative Offset

On the SR and MR series remotes all offsets are calculated on a twenty-four hour clock. To enter a negative offset either calculate the required offset by subtracting from 00:00:00:00 (-01:00:00:00 = 23:00:00:00) you can use the SR-4 to perform the calculation as follows:-

1) Zero the keyboard display: **Shift** followed by **Clear/0**
2) Zero the offset: **Store** followed by **Chase/Offset**.
3) Type the required negative offset.
4) Subtract: **Trim-** followed by **Chase/Offset**.

1.18 Pre-Roll

When more than one machine is used it will take time for all machines to become synchronised after a play command is issued. A user defined pre-roll is used with the **[Auto-Record]** and **[Rehearse]** commands and may be subtracted from locate commands. The **Pre-Roll** is set by entering the required pre-roll followed by **[Store]** followed by **[<]** (Reverse Play). The default parameters are that **[Locate]** is with pre-roll and that **[Shift]** followed by **[Locate]** is without pre-roll. The menu setting (**Setup | Root | Unit | Generic | Menu 32:- Locate with Pre-Roll**) may be used to reverse this.

1.19 Post-roll

Post-Roll is used to ensure that exit's from record are always clean. The Default post roll is 12 frames. The **Post-Roll** is set by entering the required post-roll followed by **[Store]** followed by **[>]** (Play).

1.20 Delay

Delay is used to allow external machines or the Talent time to catch up after a locate. The Default Delay is 1 Second. The **Delay** is set by entering the required Delay followed by **[Store]** followed by **[[]]** (Stop).

2.00 DISPLAY

A two line display is used on most SR/MR units, the display area may be broken into 6 area's 3 on each line upper Left, upper middle, upper right, Lower left, lower middle, lower right.

Master Display

L A: BVW-75	* Lock *	Enable B C
HH:MM:SS	B:DA-88	Locate 10:12:13:00

Slave Display

L B: DA-88	Err: 00	Offset 00:10:00:00
HH:MM:SS:FF	B:DA-88	Locate 10:12:13:00

Auto Record Display

L A: BVW-75	Master	Rec In 10:11:14:10
HH:MM:SS:FF	Loop 001	Rec Out 10:12:13:00

2.01 STATUS INDICATOR Upper Left (1st character)

A single character at the start of the line 1 indicates the status of the selected machines.

L A:DA-88 1 Current Selected machine is Locked.

G B:DA-88 1Current Selected machine is locating (GOBO).

2.02 MACHINE NAME Upper Left

Situated after the status indicator on line 1, the 8 character machine indicator displays the serial port character followed by current selected machine name (When known):-

L **C:7030**

When the machine name is not known the hexadecimal Device ID will be displayed

L D:$F111

If you connect a machine that displays its Device ID, please inform us of the displayed number, type, and record setting etc. so that we can include the machine in the next revision.

2.03 POSITION Lower Left

Situated at the start of line 2 the position display indicates the position of the selected machine.

Note:

The Frames will only be displayed when the selected machine is slow or stopped.

2.04 CURRENT KEYBOARD ENTRY Lower Right

The last eleven characters of line 2 represent the current keyboard entry or the last memory recalled. Where the memory name is known it is displayed immediately to the left of the display.

M A R K 0 1 : 0 0 : 0 0 : 0 0

The position captured when the **MARK** key was depressed.

KEYBD 00:00:12:23 Keyboard entry

This display position is also used to display the Record OUT time when an ADR LOOP mode is enabled.

Auto / Rehearse / Review / Manual

This display position will display the Record OUT time when a LOOP mode is enabled unless an entry is made to the keyboard display.

2.05 OFFSET/SHIFTER | Enable/Arm/Record Upper Right

The last eleven characters of line 1 are used to display multiple information as follows:-

1) Warning Message
2) Auto/Rehearse In point
3) Shifter if active
4) Offset if active
5) Enabled/Armed/Record

The actual display is dependent on the current system status, the list is in order of priority.

Auto / Rehearse / Review / Manual

This display position will display the Record IN time when a LOOP mode is enabled unless an entry is made to the keyboard display.

Shifter / Offset on Master or Chase Enabled Machine

1) If the Shifter is not 0 then the Shifter contents will be displayed in +/- frames.
2) If the Offset is not 0 then the offset will be displayed.

Normal

1) If any machine is in Record then its letter will be displayed.
2) If any machine is armed then its letter will be displayed.
3) If any machine is record Enabled then its letter will be displayed
4) Blank

2.06 MESSAGE TO USER Upper Middle

The centre section of line 1 is reserved for messages to users, as only one message may be displayed at a time the messages are prioritised. The following list starts at the highest priority:-

Disabled	All commands and status requests disabled
Status Only	Status and position requests only
Local	Remote control disabled, Local control only
Sync Error	Slave only, Difference between master and slave position.
Loop	When the ADR mode is enabled then "LOOP" is displayed.
Shuttle Speed	Shuttle speed in multiples of play speed
Varispeed	Varispeed as a percentage difference to nominal
Unlaced	Tape unlaced
No Syncs	No Video Syncs at the SR-4
No Tape	No tape in machine
No Comms	No communications to the machine, check cable and serial protocol
No MR-3	MR systems only: no serial interface (MR-3 or MR-4)

2.07 RECORD BANK lower Middle

The current record bank is displayed in the middle of the lower display unless auto-record or rehearse are enabled.

B:DA-88	Machine **B** (DA-88) tracks 1-8
C:9-16	Machine **C** Tracks 9-16
A:A1..A4+V	Machine **A** Tracks A1, A2, A3, A4, Video, and Assemble
D:A1..A4	Machine **D** Tracks A1, A2, A3, A4
A:	Machine **A** No tracks enabled
D:9 3324	Machine **D** Track 9 on record arm key 1

The bank key will only be active when more than one record bank is enabled (**Setup | Unit | Record | Menu 9: System Ready Length**)or (**Setup | IFACE | Record | Menu 40 | Record Tracks**)

2.08 SR-24 KEYBOARD DISPLAY

The 24 character SR-24 keyboard display shows a combination of the following:-

2.01 Status
2.02 Machine Name
2.04 Current Keyboard Entry

2.09 ERROR MESSAGES

When the user enters a prohibited key sequence a error message will appear in the top right of the display (On the SR-24 this also appears in the keyboard display). The error display will remain until you depress another key.

1: Not Record Enabled

The machine you are trying to record arm is not record enabled see section 1.11 and 3.09. Check the Machine:Track to which the key is assigned to using **[Recall]** followed by the Track Key.

If this Error message occurs after depressing the Record key to enter Record then check **Root|Unit|Record|Menu 3: Initial Record Command**

2: ! Record Inhibit !

The tape in the machine you are trying to record arm has record inhibit set, or you are trying to record enable a Playback Only Machine.

3: !System Not Locked

Attempted to enter record when the system is not locked, See section 7.006. Note this error will also occur if **Setup | Root | Unit | Record | Menu:8 Record Track Arm** is set to 2= Record and you try to enter record when not in play!

4: ! Key Lock On !

Macro 138 disabled the last key depressed, If you do not have this macro key fitted then it will be necessary to hard reset the unit as the memory has become corrupted.

5: ! OUT before IN !

Not possible to perform an Auto-Edit or Rehearse. If you are not using the record out then use Clear (**[Shift]** followed by **[0]**),followed by **[Store]** followed by **[Out]** to disable the out point.

6: ! Comms-Local-Tape

The machine to selected or the master machine is either not communicating, switched to local, or has no tape.

7: ! Macros Protected

Not possible to change macro's see **Setup | Root | Unit | Generic | Menu:30 Macro Protection**.

8: ! No Track Mapped!

Use Recall followed by the Track arm key to check the track mapping see section 9.00 and T2.00.

9: Master/Rec Enabled

Changing the offset on a record enabled machine or the Master is not allowed. If it necessary to change the offset disable the record first or change **Unit|Record|Menu 05 Master/Rec Enab Offset Change**, See Section 7.05.

10: !Locate to Start!

If Rewind is active and the selected machine is within a window defined by **Root | Iface | Chase | Menu 50:- Locate Speed** of the user defined start (**[Recall]** followed by **[<<]**) then a Locate to Start command will be issued. To disable/enable this feature enter the required start time then **[Store]** followed by **[<<]**. Setting a start time of 00:00:00:00 will disable.

11: TC Jump or Pre-Rol

Record in point missed due to timecode edit or insufficient pre-roll to allow the backup DAT to lock and record it's ident.

12: !Commands Disabled

Commands to the Selected machine or Master are disabled, see menu **Root | IFace | General | Menu 58: Command Enable** (On MR-3 check front panel switch).

13: !Video Not Stopped

Changing of edit mode when in play is inhibited on video machines because of the head switching, Stop machine to change.

14: !Alg & Vid Enable!
The track you are trying to arm is disabled in **Root | IFace | Record | menu 35: Analog and Video Rec Rdy**.

15: !Not all in Record
During an Auto-Edit, not all armed machines entered record.

Ampex Protocol: This message is given during an edit if the Record Lockout/Inhibit on the machine is on.

16: ! Crash Enabled !
Command is not possible because the selected machine or Master is Crash Record Enabled.

17: ! No Tape !
No Tape in machine

18: !Macro Not Fitted!
Macro Number as defined by key not implemented in the software. (Usually because a 27C256 Eprom is fitted).

19: !No Macro defined!
No Macro defined for key, enter macro number followed by [Shift], followed by [Store], followed by key.

20: !Not In Record!

21: !No Tracks Armed!
Auto-Edit attempted with no tracks armed.

22: !No EEPROM Access!
EEprom not found during power-up, reset unit using small reset button or power on and off. If problem persists contact CB Electronics.

23: !Backup Machine!
No Chase command may be issued to the backup machine. See **Setup|ADR/Auto|Options|Menu 79: Backup Machine**

24: !Rec Out Disabled!
Record out disabled by Macro Key 75.

3.00 KEYBOARD

3.01 SHIFT

When the shift led is illuminated the function of some keys is modified as follows:-

0 / Clear	Clear keyboard buffer.
Locate	Locate without pre-roll.
Shift	Delete last numeric key entry
>>	Unlaced Forward Wind
<<	Unlaced Reverse Wind
MCN-1..MCN-4	Select the master machine
Reader	Select the timecode reader as a timecode only master
Chase/Offset	**Slave Machine**: calculate the offset between master and slave at current position and enable chase. **Master Machine**: Deselect all slaves and reset all offsets.
Stop	Unlace machine
Play	Send PLAY command to machine without checking if a **RECORD OFF** command should be sent instead

3.02 STORE / RECALL / TRIM + / TRIM -

When the STORE, RECALL or TRIM LED's are illuminated the keyboard stores may be accessed. Note

that the STORE, RECALL and TRIM functions are self-cancelling and will cancel after about 5 seconds if no second key is depressed. The keyboard stores are as follows:-

Record-In	Record in point
Record-Out	Record Out point
0-9	Scratch pad stores
Shift 0-9	More Scratch pad stores
Record	Record Advance
Stop	Loop Delay
<<	Head of tape
>>	End of tape
Instant Replay	Instant Replay
Locate	**Recall** Last locate point
Next Loop	Use **Store** to jump to specified loop Number
Chase/Offset	**Store/Recall** the current machine **Offset**.
< Reverse Play	Pre-Roll
> Play	Post-Roll

The **Store** key is used as follows:-

1) Use the **MARK** key to capture a timecode number on the fly or use the numeric keypad to enter a timecode number.
2) Hit the **STORE** key and illuminate **STORE**
3) While the **STORE LED** is illuminated hit any of the keys as listed above to save the data.

e.g. To enter a value of 01:00:00:00 as the RECORD-IN point the following key sequence should be used:-
[**1**] [**0**] [**0**] [**0**] [**0**] [**0**] [**0**] [**Store**] [**In**]

The lower Right display should say:- **Rec In 01:00:00:00**

The **RECALL** key is used as follows:-

1) Hit the **RECALL** key and illuminate **RECALL**
2) While the RECALL LED is illuminated hit any of the keys listed above to display the contents of the keyboard store.

e.g. To Recall the RECORD IN point the following key sequence should be used:-
[**Recall**] [**Record In**]

The lower Right display should say:- **Rec In 01:00:00:00**

3.03 TRIM+ and TRIM-

The **Trim+** and **Trim-** keys are used as follows:-

1) Enter the number to Add/Subtract from a store using the numeric keypad.
2) Hit the **TRIM+** / **TRIM-** key to illuminate the LED.
3) While the **TRIM+** / **TRIM-** LED is illuminated hit any memory key

e.g. to move the record in point 5 frames earlier the following key sequence should be used:-
[**5**] [**Trim -**] [**Record In**]

The keyboard (Lower Right) display should be:- **REC IN 00:59:59:20**

3.04 RECALL-RECALL

The key combination Recall-Recall swaps the current and last keyboard entry.

3.05 INSTANT REPLAY

With the advent on digital systems it is often not possible to listen to the audio in reverse. A quick method of going back a few seconds is therefor required. **INSTANT REPLAY** is provided for this purpose.

Every time the **INSTANT REPLAY** key is depressed the system will locate back by a pre-defined number of seconds and enter play. for example if 10 seconds is stored in the **INSTANT REPLAY** memory the first depression will locate back 10 seconds, two depressions 20 seconds, three

depressions 30 seconds .....

3.06 AGAIN

The Again key is used to locate that last point at which the play key was depressed. There are two levels of again, a second depression will locate the previous point at which the play key was depressed.

If Auto Record or Rehearse are active then Again will Redo the current edit.

3.07 MARK

The **MARK** key is used to capture the current timecode value, this is much quicker than typing in a value and may be used in the same way. The Mark store is 64 entries long and any entry may be accessed using the **[ID <<]** and **[ID >>]** keys.
The mark key operation is modified in the following ways

Store Followed by **Mark** = Mark Sync (See Offset)
Recall Followed by **Mark** = Find specified Mark point 0..63
Shift Followed by **Mark** = Reset Mark Pointers and capture position as MARK01

Note: When the current machine is a slave then the current Master timecode is captured.

3.09 RECORD ENABLE GROUP

The Record Enable is used to specify which machines will accept a **RECORD** or **UN-RECORD** command. This is particularly important when Group record commands are issued.
To specify the record enabled machines, hold down the **RECORD** key and DEPRESS the MCN selection keys. To view the current Record Enabled Machines depress and hold down the **RECORD** key.

The properties of record enabled machines are as follows:-

1) A **RECORD** or **UN-RECORD** command sent to all machines that are record enabled.

3.10 MASTER MACHINE

When controlling a group of machines it is normal to consider one machine as the master the other machines will slave to or chase the master. Commands to the group of machines are then sent to the master machine.

To select a master machine use **[SHIFT]** followed by a machine key, only one serial port, the Reader, or Generator may be selected as the master at any time, the selected master machine has the following properties:-

1) **RECORD** and **UN-RECORD** commands to the master are sent to all group machines that are record enabled.
2) When the timecode output is fitted, the timecode output will follow the selected master machine.
3) The master machine's position is used for automatic offset calculations **MARK SYNC**, or **Shift Offset**.

3.11 CHASE (SLAVE) MACHINE

When chase is enabled on any machine the keyboard is modified as follows:-

1) Transport commands to any chase-enabled machine (Play, Stop, Wind, Shuttle, and Jog) are redirected to the master machine.
2) **RECORD** and **UN-RECORD** commands are sent to all Record Enabled machines.
3) The LED's of all machines in the group will be illuminated.
4) The specified Master machine LED will flash to indicate the command redirection.

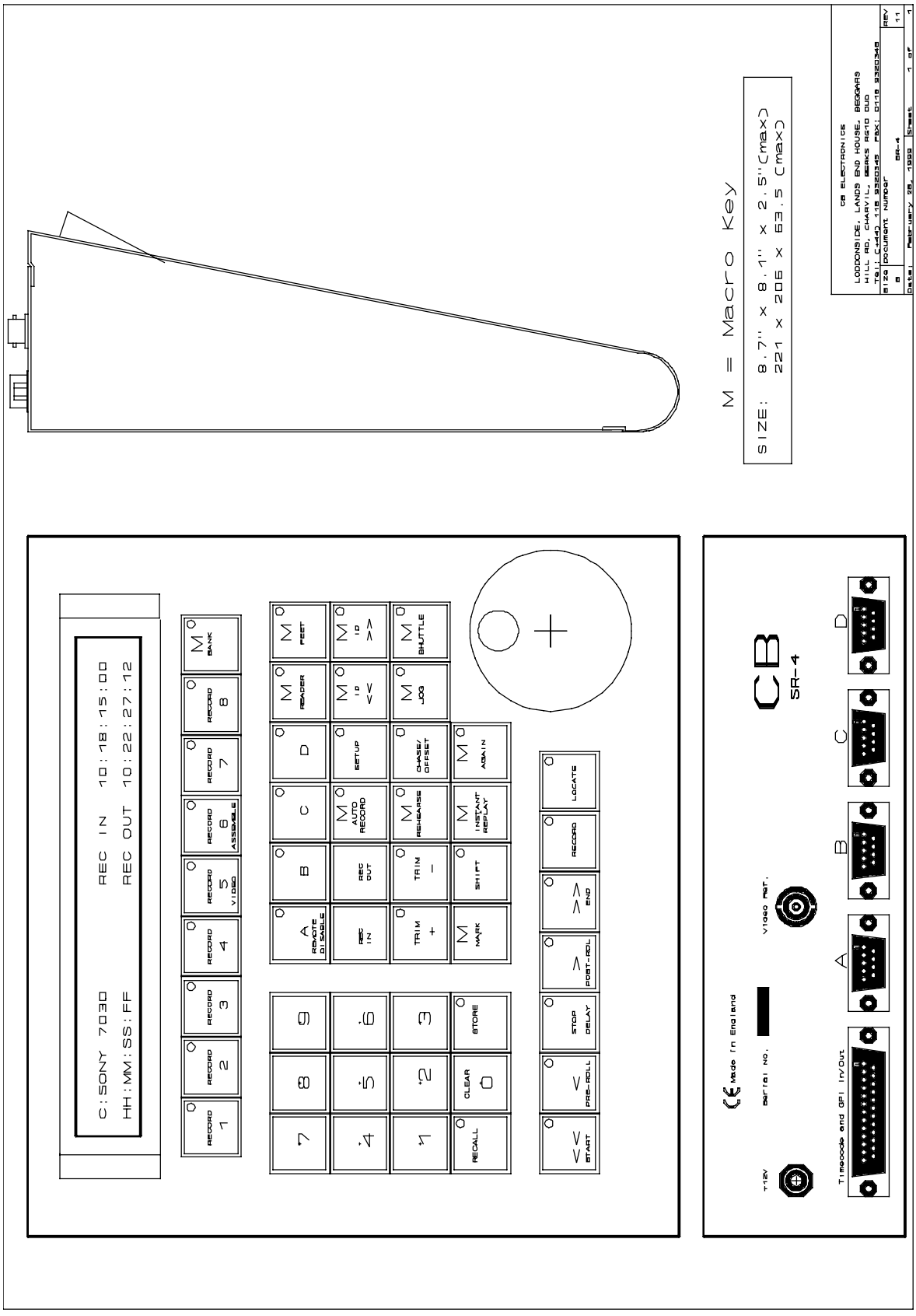
3.12 RECORD TRACK ENABLES

The [**Bank**] switch controls the eight red track enables. The current key assignment is shown in the middle of the lower line of the display.

The current machine track assignment of each key may be determined by use **Recall** followed by the selected track key. The display will then show the current Machine and track assignment:-**M c : T r k** 00:00:02:04 Machine B Track 4

When system record readies are used (Record Bank Macro 66) **Store** followed by the selected track key may be used to assign a machine track combination to a key.

Track number assignment	
1..48	Digital tracks 1..48
49	Analog 1
50	Analog 2
51	Analog 3 / Timecode
52	Analog 4
53	Video
54	Assemble



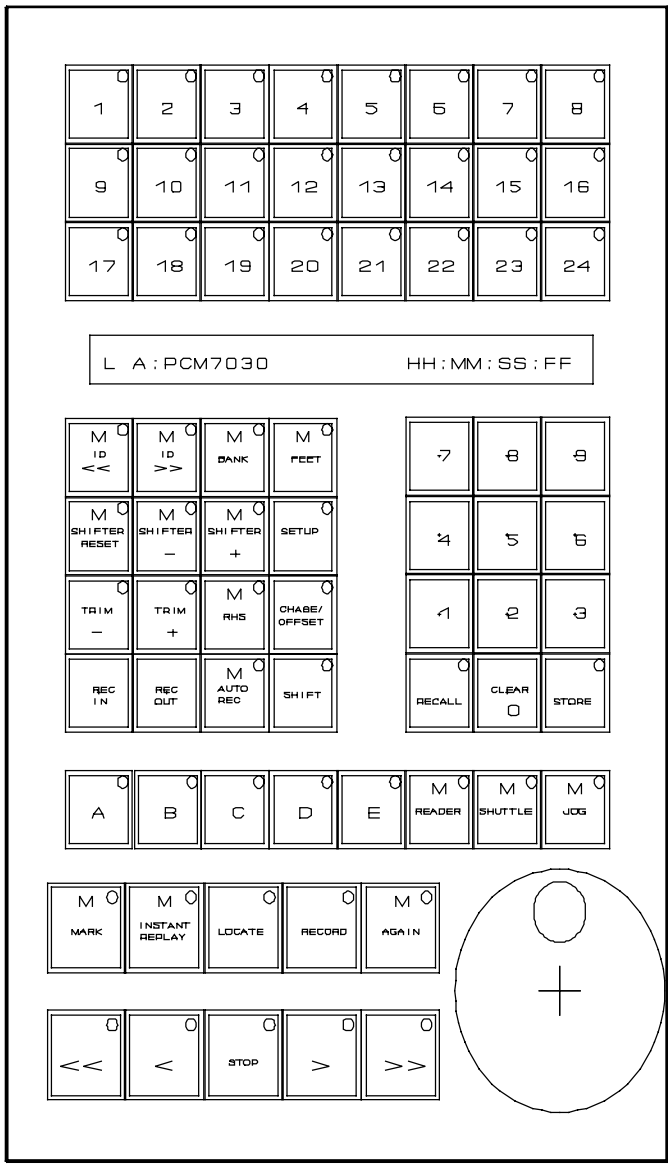
SR-4 Keyboard

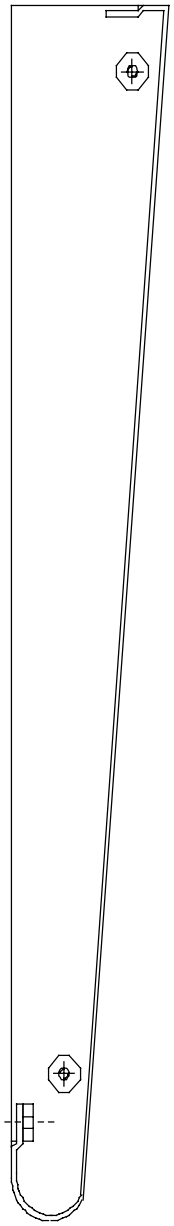
Main Display

C:SONY 7030 Master Rec In 10:18:15:00
HH:MM:SS:FF Loop 001 Rec Out 10:22:27:12

SR-24 Keyboard

CROSS SECTION


1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24
L A:PCM7030 HH:MM:SS:FF
M ID << M ID >> M BANK M FEET
M SHIFTER RESET M SHIFTER − M SHIFTER + SETUP
TRIM − TRIM + M RHS CHASE/ OFFSET
REC IN REC OUT M AUTO REC SHIFT
7 8 9
4 5 6
1 2 3
RECALL CLEAR 0 STORE
A B C D E M READER M SHUTTLE M JOG
M MARK M INSTANT REPLAY LOCATE RECORD M AGAIN
<< < STOP > >>



M = Macro Key

262mm x 165mm

10.3'' x 6.5''

CB ELECTRONICS		
LODDONSIDE, LANDS END HOUSE, BEGGARS HILL RD, CHARVIL, BERKS RG10 0UD Tel: (+44) 118 9320345 Fax: 0118 9320348		
Size D	Document Number SR24a	REV 11

3.13 RECORD BANK

The record bank key is used with the record track ready keys. The record Bank key and record ready keys may have 3 different functions as assigned by **Root | Unit | Record | Menu 07: Track Arm Keys** as follows:-

0= System Ready

The record keys can address any machine in the system and may be individually programmed. The system bank length is set in the unit menu.

1= Machine Ready

The record keys are assigned to the current selected machine, the ready keys may not be programmed.

2= Record Machine Ready

The record keys may be assigned to any machine in the system but may not be individually programmed.

The current record bank is displayed in the middle of the lower display unless auto-record or rehearse are enabled.

B:DA-88	Machine **B** (DA-88) tracks 1-8
C:9-16	Machine **C** Tracks 9-16
A:A1..A4+V	Machine **A** Tracks A1, A2, A3, A4, and Video
D:A1..A4	Machine **D** Tracks A1, A2, A3, A4
A:	Machine **A** No tracks enabled
A:A+V+Asmb	Machine **A** Analogue Audio, Video and Assemble

3.14 PLAY

The Play key's function changes dependant on the transport mode as follows:-

Locating	The Play key will enable (Play LED flashing) / disable (Play LED OFF) the delayed play function.
Playing	The Play key will issue a **Record Off** command
Record	The Play key will issue a **Record Off** command

Shift followed by **Play** will always issue a play command.

3.15 ID << and ID >>

The function of the ID keys depends on the units current mode as follows:-

1) Auto Edit, Rehearse loop modes
   Used to step between Previous and Next Loop.
2) DAT Machine
   Locate previous or next ID.
3) Slow-motion macro key is active.
   Decrease/Increase the current programable play speed.
4) MR system with Giant Display interface
   Increase/Decrease Display Brightness simultaneous depression of both keys will turn off/on Display

4.00 AUTO RECORD/ADR/TAKER MODES

Auto Record and ADR(TAKER) are linked, they use the same Record-In and Out keys, Auto and Rehearse keys. **Root | Auto/ADR | Options |Menu 77: Auto-Rec, Rehearse** allows the user to select between Adr Mode, Cmd, and Editor Modes as follows:-

1= Cmd , 2= Editor
These are used for video editing and assembly where compensation is required for different machines record in delays. The Auto and Rehearse keys have the following functions when 1=Cmd or 2= Editor are selected

Auto Key
Locate to Pre-Roll before the specified record in point and commence auto edit. If the system is currently in record/rehearse it will be necessary to hit the auto key twice as the record exit routine will clear any auto edit.

Rehearse Key
Locate to Pre-Roll before the specified record in point and commence auto rehearse (All chanels in record Ready will switch to input between the record in and out points). If the system is currently in record/rehearse it will be necessary to hit the rehearse key twice as the record exit routine will clear any auto edit.

0=ADR Mode
In ADR/Taker applications where there is one record machine and the operator controls the record advance to compensate for both the Machine and the Talent. This mode also allows the Out point to be turned off using the Cycle/Out Enable Macro Key.

0= ADR Mode
There are 4 LOOP modes:-**[Auto]**, **[Rehearse]**, **[Manual]**, and **[Review]** as described below, the loop modes are selected, enabled and disabled using these keys. When any loop mode is active the system is modified as follows:-
1) The **Locate** switch is modified to always locate pre-roll ahead of **Record-In**.
2) **Shift** followed by **Locate** locates **Record-In**.
3) **Auto** will locate to preroll before record in, when all machines arrive the system will start the auto record.

1= Cmd / 2= Editor
The **[Auto]** and **[Rehearse]** keys act as commands, when initiated the system will locate to pre-roll before the Record-In point and wait for all machines to arrive. The system will then enter Play followed by Record or rehearse at the in-point. Once the system leaves record or play the Auto/Rehearse LED will extinguish and the system will revert to normal.

4.01 AUTO and REHEARSE OFF

When no LOOP mode is active the following applies:-
1) LOOP keys are **NOT** active.
2) The **LOCATE** key locates **Current Entry** display with/without pre-roll as determined by menu 28.
4) **SHIFT-LOCATE** locates the **Current Entry** display with/without pre-roll as determined by menu 28.

4.02 REHEARSE MODE

In the rehearse mode the following apply:-
1) Both **Record** and **Un-Record** are disabled.
2) At post roll past the **Record Out** point the system will locate pre-roll before **Record In**.

On selecting the **Rehearse** mode the following commands are sent:-
1) Locate pre-roll ahead of **Record-in**.

4,03 AUTO RECORD MODE

In the Auto Record mode the following apply:-
1) Auto-Record Drop in / Drop out enabled.

2) At post roll past the **Record Out** point the system will either stop or locate pre-roll before record in (See Unit Set-up).

On selecting the **AUTO REC** mode the following commands are sent:-
1) Locate pre-roll ahead of **Record-in**.

4.04 MANUAL RECORD MODE

SHIFT followed by **AUTO-RECORD** will enter Manual Record, the **AUTO-RECORD** LED will flash. The system will loop between **REC-IN** and **REC-OUT** as normal but will not enter record or drop out of record.

In the Manual Record mode the following apply:-
1) No Auto-Record On command is sent at the In Point
2) If Enabled A record off command will be sent at the Record Out point, At post roll past the **Record Out** point the system will either stop or locate pre-roll before record in (See Unit Set-up).

On selecting the **MAN REC** mode the following commands are sent:-
1) Locate pre-roll ahead of **Record-in**.

4.05 REVIEW MODE

SHIFT followed by **REHEARSE** will enter Review, the **REVIEW** LED will Flash. The system will loop between **REC-IN** and **REC-OUT** as normal but the will not enter record automatically or manually.

In the Review mode the following apply:-
1) Both **Record** and **Un-Record** are disabled.
On selecting the **Review** mode the following commands are sent:-
1) Locate pre-roll ahead of **Record-in**.

4.06 NEXT LOOP (Available as Macro Key) or **[ID <<]**

4.07 PREV LOOP (Available as Macro Key) or **[ID <<]**

System/Machine	[ID <<]	[ID >>]
1) Auto/Rehearse/Manual/Review Active or Setup Mode	Prev Loop	Next Loop
2) Dat Machine	Locate Prev ID	Locate next ID
3) Slow-Motion Active	Decrease Speed	Increase Speed
4) Doremi V-1	Prev Segment	Next Segment
5) MR System	Decrease Giant Display Brightness	Increase Giant Display Brightness

4.08 JUMP TO LOOP ??? (Only available with **Next Loop** Macro Key)

To access a specific loop, enter the loop number and use either **Store** or **Recall** followed by **Next Loop** or **Prev Loop**. Note that this will access the loop at this pointer location, where extra loops have been inserted or the loops are not numerically labelled then some intuitive guesswork may be needed.

4.09 JOIN LOOP (Available as Macro Key)

Used to Join two or more loops each depression of this key increments the loop pointer and updates the **Record Out** only. The **Record In** is left at the original value.

4.10 INSERT LOOP (Available as Macro Key)

Used to insert a new loop in an existing list, the same loop number is used with a letter suffix e.g. 11 -> 11A, 11A -> 11B....

4.11 DELETE LOOP (Available as Macro Key)

To delete a loop use **SHIFT** followed by **INSERT LOOP**, caution! once a loop is deleted it lost there is no undo function!

4.12 Cycle: Record Out Enable (Available as Macro Key)

This key enables/disables the current record out point

4.13 Talent Cueing: CB VS-1 Streamer

For dedicated ADR/TAKER Systems the MR system is used and the CB **VS-1 Video Streamer** connects directly to the BUS. All record in points are sent to the streamer via the bus along with the current record in and out points. This allows the VS-1 to do the following

Ignore cue points before the current record in point

Show all cues after the current record in point.
Enable and Disable BVB Video Mode, Blank the video before and after the loop.
Progress Bar indicating the progress through a loop.
Add an extra cue at the timecode value stored in scratch pad memory 9.
Display a Lock indication in the Video.
Display a Record indication in the Video.
Enable and Disable all video insertions.

The SR systems do not have a bus connection, the GPO's are used to communicate with the streamer see sections 4.16 and 4.17 below

4.14 BACKUP DAT

It is common to run a backup dat which makes a safety copy of all takes. As the DAT is stereo one suggestion is to record the same audio on both tracks with one at a 6dB lower level.

The SR/MR system allows you to designate one of the serial ports for this task and will then put the DAT into record at the start of the pre-roll and stop at the end of the postroll.

Setup as follows:-

1) Record enable the selected port and Record Armed.
2) Open the Setup and select **Root|Auto/ADR|Options|MENU 79:- ADR Backup Machine** and set to the desired port.

Note to use the track arming on the machine front panel and not on the SR/MR unit select backup machine and set **Root|IFACE|Record|Menu 34|Record Tracks** to 0=Off.

4.15 RECORD ADVANCE

When in ADR Mode the Record advance is global, to Set the Record Advance, type in the required record advance, then press **Store** followed by **Record**.

To check the current Record Advance depress **Recall** Followed by **Record**.

4.16 Streamer/Wipe Trigger output

GP Outputs 6 may be configured (see Section 7.29 **Root | Unit | Generic | Menu:29 GP Outputs 4, 5, 6**) to trigger an external wipe generator for example the VS-1. keypad memory Shift-9 is used to store the duration of the wipe so as to output the ttl trigger signal at the correct point before the record in point. GP output 6 (pin 7 on the 25 way 'D' connector) will be High for one frame.

Storing a timecode number in Scratch-pad memory 9 will set an extra cue point and may be used to cue the artist at a point in the middle of a loop.

4.17 Beep output

GP output 5 may be configured (see Section 7.29 **Root | Unit | Generic | Menu:29 GP Outputs 4, 5, 6**) to trigger an external Beep generator three times before the record in point. The interval between beeps is 17 frames in PAL (approximately 1 foot). GP output 5 will be high for one frame at the following intervals before the record in point.

Beep Trigger Timing

Standard	PAL (25 frames per second)	NTSC (29.97 frames per second)
Beep 1	51 frames, 2.04 Secs	60 frames, 2 Secs
Beep 2	34 frames, 1.36 Secs	40 frames, 1.33 Secs
Beep 3	17 frames, 0.68 Secs	20 frames, 0.67 Secs

CB Electronics can supply the Beep Generation PCB used in the VS-1, this requires an power supply of +12v, +5v and -12v.

5.00 MACRO KEYS

The macro keys allow you to change the functions of some of the keys, or to rearrange the keys to move the ones that you use most often closer together. It is very quick to re-define macro keys so that keys may be redefined for one session only if required.

There are 12 macro keys on both the SR-4 and SR-24, these may be used for any of the macro functions listed in section T1.00.

The standard Macros on installed on both the SR-4 and Sr-24 are:-

Bank, Reader, Feet, Generator, Auto-Rec, Rehearse, ID <-, ID->, Mark, Instant Replay, Again, Jog, Shuttle

5.01 DEFINING A MACRO KEY

All the macro keys may be defined as any of the functions defined in the following lists, Where there is a LED, the LED follows the function of the key.

1) Disable the macro protection **Setup | Unit | Generic | Menu 26: Macro Protection**
2) Look up macro key number from the list in the technical manual and type in the macro number.
3) Key in **Shift** followed by **Store** followed by the desired MACRO key.
4) Enable the macro protection.

Example:

To change the function of the **FEET** key to **Generator** key (Macro 118).

1) Type in 00:00:01:18 in the keyboard display.
2) **Shift** followed by **Store** followed by **Feet**.
3) The display should show:- **Macro 11:00:01:18**, the 11 is the macro key number as described in the user file.

Then turn the paper label in the key over, write on the new function **Gen** and the macro number 119, The key is now programmed with its new function until the next time you activate a hard reset.

5.02 READING A MACRO KEY

To read the Macro Function of any macro key enter the following sequence:-

Shift, Recall, followed by the macro key

Example

To read the Macro number for the **Instant Replay** key.
Shift followed by **Recall** followed by **Instant Replay**
The display should now show:-
Macro 17:00:01:21 Macro key number 17, Macro number 121

The Macro key number will change from key to key, the Macro Number determins the function of the key

5.03 Factory default MACRO KEYS

To install the Factory Default macros and parameters set **Setup | Unit | Generic | Menu 26: Macro Protection** to 2= factory Default.

5.10 Some Useful Macro's

5.11 Shifter control :- Macro's 68, 69 and 70

The shifter is used as a temporary offset register and is added to the current offset. When the shifter is active its value is displayed instead of the offset. The shifter offset may be made permanent by using **Store** followed by **Shifter Reset**.

5.12 Instant Record :- Macro 74

Locate back by a user-determined time + pre-roll, play, lock and then record.

5.13 Auto Input Monitor :- Macro 109

This macro key will directly switch any channel in record ready between input and replay monitor. The LED will illuminate when input monitor is selected.

5.14 Display Generator : Macro 118

The Generator output will normally follow the selected master, using this macro key allows you to select the generator directly and select it as a master. When selected as a master the motion control switches will directly control the generator. We use this to test a single machine as a slave, it may be used when you wish to work with non-linear systems only.

5,15 Step Forward and Reverse : Macros 126 & 127

These keys will increment or decrement the current machine position, the key depressions are counted so that to move forward 5 frames hit **Step +** five times.

5.16 *2, *4, *6 Wind :- Macro's 134,135,136

The fast forward (**>>**) and rewind (**<<**) switches will normally wind at the maximum laced speed, when any of these keys are active the wind speed is reduced to 2, 4, or 6 times play speed.

User programmable wind speed:-

The *4 and *6 macro keys may also be used as user programmable wind speed keys. **Shift** followed by ***4** or ***6** will enable the selected speed, entering a numeric value followed by **Store** followed by the ***4** or ***6** key will change the selected speed.

Calculating the speed:-

1-50 = speed in frames per second (Pal) 1.2 frames per second (NTSC)

25 = Play speed, 12 = 0.5* Play speed, 50 = 2* Play Speed.

51= *3, 53= *4, 53= *5, 54= *6, 55= *7, 56= *8, 57= *9, 58= *7.0..

5.17 Red light :- Macro 144

The red light output will be active whenever the system is in record or during the pre-roll of auto-record, the red light switch will activate the output whenever it's LED is illuminated.

5.18 One Key Post Sync :- Macro 150

Position Master so that the Timecode Slate is visible, enter the timecode number displayed, hit this key and the offset is calculated for machine 'D', the current video position is set as Record In, and a Chase-On command is sent to Machine 'D'.

5.19 Loop:- Macro 66

Allows current machine to loop between in and out points, preroll will depend on the setting of **Root | Unit | Generic | Menu 28 :- Locate with Pre-Roll**. Use **[Shift]** followed by **[Loop]** (Led Flash) to repeat loops. When **[Loop]** is enabled locate will always locate the in point or pre-roll before the in-point dependant on Menu 28.

6.00 OFFSET

Offset is used to define the positional relationship between machines. In an ideal world it would not exist! The slave timecode position when locked to a master is calculated as follows:-

Slave Position - Slave Offset = Master Position - Master Offset
Slave Position = Master Position + Slave Offset - Master Offset

6.01 DIRECT ENTRY OF OFFSETS

To write an offset:-

1) Select machine
2) Key in offset
3) store offset by keying **Store** followed by **Chase/Offset**

To recall an offset:-

1) Select machine
2) recall offset by keying **Recall** followed by **Chase/Offset**

6.02 AUTO OFFSET CALCULATION

Where the offset value is not known there are three ways to automatically calculate the offset as follows:-

AUTO SLAVE

This will calculate the offset between the master and slave for their current positions and tell the slave to chase.

1) Select and position the Master
2) Select Slave, ensure that chase is OFF, then position the slave.
3) Hit **[SHIFT]** followed by **[CHASE]**

MARK SYNC

This allows the user to define a specific point on both the master and slave as the sync point.

1) Select the master and enter a known time code value from keyboard or by using the **Mark** key.
2) Hit **Store** followed by **Mark**, this sets the master MARK SYNC point
3) Select slave machine and enter the timecode value for the equivalent point from the keyboard or using **Mark**.
4) Hit **Store** followed by **Mark**, this sets the slave MARK SYNC point and calculates the OFFSET
5) Hit **[Chase/Offset]** this will tell the slave to chase the master.

VIDEO EDITOR

If the video editor mode is selected (**Root | Unit | Record |Menu 12: Record In & Out Mode** 1= Editor) then the SR-4 may be used as a video editor by defining the Master and slave record in points as follows:-

1) Select the master and define the record in point.
2) Select the Slave and define the record in point.

16.03 TRIMMING THE OFFSET

The **Trim-** and **Trim+** keys may be used to adjust the offset register as follows:-

To add 10 frames to the current offset.

1) Select the machine using a **A, B, C, or D** key.
2) Enter 00:00:00:10 in the Keyboard display
3) Depress the **Trim+** key followed by the **Chase/Offset** key.
4) The unit should now display the new offset

6.04 ENTERING A NEGATIVE OFFSET

On the SR series remotes all offsets are calculated on a twenty-four hour clock. To enter a negative offset either calculate the required offset by subtracting from 00:00:00:00 (-01:00:00:00 = 23:00:00:00) you can use the SR-4 to perform the calculation as follows:-

1) Zero the keyboard display: **Shift** followed by **Clear/0**
2) Zero the offset: **Store** followed by **Chase/Offset**.
3) Type the required negative offset.
4) Subtract: **Trim-** followed by **Chase/Offset**.

6.05 SUB-FRAME OFFSETS

When synchronising machines by RS422 and Video Syncs sub-frame offsets are not possible. However when using the SR/MR to control the synchroniser within the machine or a synchroniser then sub frame offsets may be possible.

To set a sub frame offset

1) Enter the required sub frame offset (00..99)
2) Key in **Shift** followed by **Store** followed by **Chase/Offset**
3) If correct the display will show **SubFrm** 00:00:00:SS where SS is the sub frame offset entered.

To Recall a sub frame offset, use **Shift** followed by **Recall** followed by **Chase/Offset**.

Note.1 The Sub-frame Offset is cleared if you enter a zero offset, to enter an offset off 00:00:00:00:SS, first clear the offset then enter the sub-frame offset required.

Note.2 Sub-Frame offsets are sent via the P2 protocol in two different ways either as a one-byte number between 0..99 or 0..79 or a two-byte number. **Root | IFace | Chase | Menu 53: Sub Frame Offset** selects the appropriate mode. When one byte offsets are required the user should enter 0..99 or 0.79 as specified by the machine. Where two byte offsets are required the user should enter the sub frame offset as a percentage (0..99).

Note.3 Sub Frame offsets have been tested on the following interfaces:-

1) DA88/98 via the 15 pin remote
2) Timeline Lynx

6.06 CLEAR ALL OFFSETS

To clear all offsets and disable chase on all machines:-

1) Select Master
2) **[SHIFT]** followed by **[CHASE]**

This function is available as macro key number 175.

6.07 OFFSET CHANGE LOCKOUT WHEN RECORD ENABLED/MASTER

To prevent accidental entry of offsets on record machines it is not possible to change the offset on a record enabled machine. The warning message **Master/Rec Enabled** will be displayed in this event. To enable/disable select:-

Setup | Root | Unit | Record | Menu 05:- Master/Rec Enb Offset Change

6.08 Shifter (Macro's on SR-4, SR-24 as standard)

The shifter is used to enter small temporary offsets to a machine in order to sync up one section. The three shifter keys allow you to increment, decrement and reset the shifter value. The shifter value is then added to the machine offset. With the shifter you do not have to remember the number of frames or the direction of the temporary offset, this is held in the shifter memory and displayed when the machine is selected.

6.09 Using the shifter to nudge offset's

As the shifter has dedicated increment and decrement keys it is ideal for nudging the offset of any machine, the alternative requires three keys [1] [Trim+/-] [Offset]. The shifter display also keeps track of what you have done. When you have finished adjusting the shifter use [Store] followed by {Shifter Reset] to add the shifter contents to the current offset and reset the shifter.

6.10 The Colour Frame Key

When fitted the colour frame key changes the operation of the **Store Offset** command. The offset must be in a multiple of 4 frames for correct colour framing. The defined offset will be modified so as to be a multiple of 4 and within +/- 2 frames of the specified offset.

6.101 Colour Trim

To trim the colour frame offset enter the trim value (frames between 0 and 3), followed by **[Store]** followed by **[Colour Frame]**.

6.11 Mixed Code

When mixing Drop and Non-Drop Code there are several points to be aware of as follows

6.111 Mixed Code & Offset

There will nearly allways be an offset due to the fact that there are a different number of frames in each minuit. The normal starting point is 01:00:00:00, at this point there is an offset of 108 frames or 3 seconds and 18 frames.

6.112 Mixed Code Passing through Zero/Midnight.

If there are a different number of frames in each minute then it follows that there are adifferent number of frames in each day. This causes a problem when passing through midnight as at this point the frame count is reset to zero changing any current offset.

To overcome this problem add an identical time to both the master and slave offsets. This will chage both the master and slave's efective positions and remove the problem.

6.20 Offset and Record In

Offset and Record In interact, the relationship between machines may be defined as offset or sync points. When defining the record in point on a machine you are also defining the sync point. The following three Setup Variabless effect the action when a new record in point is defined.

Setup | Root | Unit | Record | Menu 05:- Master/Rec Enab Offset Change

When disabled setting the record in point on a record enabled machine will set the master record in point and not change the offset.

Setup | Root | Unit | Record | Menu 12:- Constant Offset Mode

If constant offset mode is **ON** then the offset will always remain constant and the in points will. change.

Setup | Root | Auto | Options | Menu 77:- Auto-Rec, rehearse

When set to Editor setting the master record in point will zero the master offset.

Effect of Changing the **Record In point** **Constant Offset= 1= Off**			
Selected Machine	Effect On Master	Effect On Slave Mcn	Effect On Free Mcn
Master	Set Rec In	Update Rec In	Update Offset
Slave Mcn	Update Rec In	Set Rec In	Update Offset
Free Mcn			Set Rec In Update Offset

Effect of Changing the **Record In point** **Constant Offset= 0= On**			
Selected Machine	Effect On Master	Effect On Slave Mcn	Effect On Free Mcn
Master	Set Rec In	Update Rec In	Update Rec In
Slave Mcn	Update Rec In	Set Rec In	Update Rec In
Free Mcn	Update Rec In	Update Rec In	Set Rec In

Effect of Changing the **Offset** **Constant Offset= On or Off**			
Selected Machine	Effect On Master	Effect On Slave Mcn	Effect On Free Mcn
Master	Set Offset	Update Rec In	Update Rec In
Slave Mcn		Set Offset Update Rec In	
Free Mcn			Set Offset Update Rec In

Update Rec In: Adjust Rec In allowing for offset differences
Update Offset: Adjust Offset allowing for Rec In differences

Record Out

When setting the record out point the duration of the Edit is defined.

7.00 Set-up

At first the set-up on the SR/MR may appear very daunting, but if you can set-up your mobile phone then this should be simple! When you connect the system it should work from first connection. The unit setup is preset for normal operation, and machine setup is automatic provided that the machine is identified correctly.

Once the machine is identified correctly the machine interface software (IFACE) parameters will be set up automatically, after this the user may modify the setup if required, The modified setup will remain until Hard reset or a different machine is connected to the port.

Machines such as the DA88, DA98, and DD8 have setup options for machine ID and record track arming. These must be set correctly in order that the interface identifies the machine correctly and sets up the track arming correctly. For further information on machines check the SR-Tech manual.

The software in the MR/SR and in different machines changes, because of this the user can access all the parameters used in the system. If you need to change an individual parameter to suit your software please inform us so that we can keep both our manual and software up to date. The current manuals are available from our web site www.colinbroad.com, the current software for standard products is also available on our web site.

After switching on the unit entering setup will access the **Root** Menu, at other times entering setup will access the last menu displayed.

To leave the setup menu use the **[Setup]** key from the **Root** Menu, if not in the Root Menu, the first depression of the **[Setup]** key will return to the **Root** Menu, a second depression of the **[Setup]** key will exit **Setup**.

The set-up menu map (SR-Menu) is split into four diagrams. The first shows an overall picture the next three expand individual sections. From the Root Menu you can access any menu. If you are in setup and not in the ROOT Menu then depressing the **[Setup]** key will take you there.

Whilst the set-up mode is active the **Set-up** LED will be illuminated. Once within the set-up menu the key functions are modified as follows:-

[0]-[9]	Select next menu or the setting within the current menu.
Store	Save the current setting and select Next menu
Recall	Save the current setting and select Previous menu
Set-up	If the **ROOT MENU** is displayed then exit **Set-up** if any other menu is displayed then Goto the **ROOT MENU**.

The Sr/MR Setup is split into three sections as described in section 7.01 below.

7.01 ROOT: Select Set-up Required

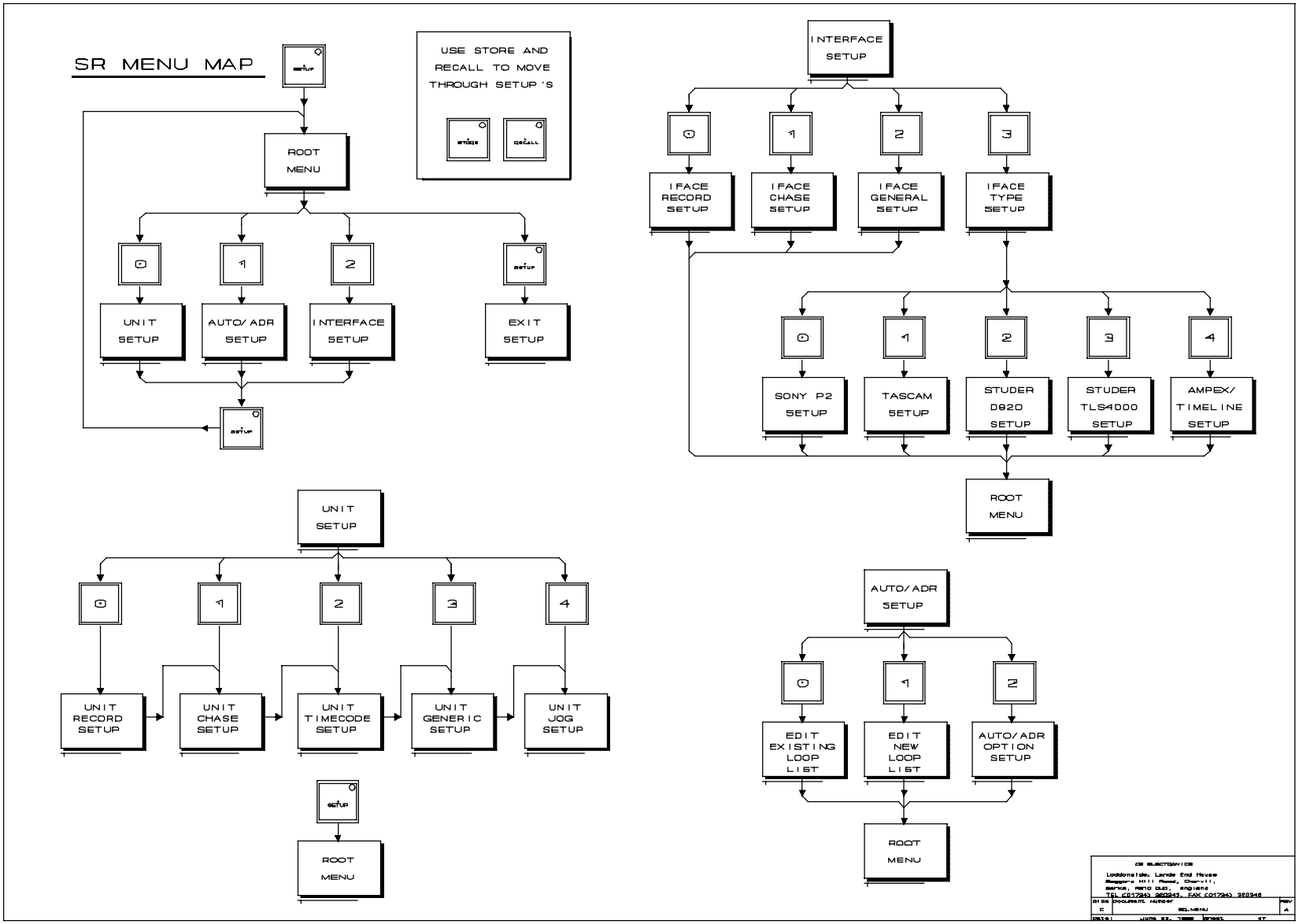
```
MENU 01:- ROOT: Select Setup Required
0= Unit,  1= Auto/ADR  2= IFace
```

0= Unit	Select unit setup menu, global parameters that determine system operation and are not machine specific.
1= Auto/ADR	Auto Record/ADR Loop entry and Option selection
2= IFACE	The currently selected Serial port protocol and its connected machine control parameters, once setup is entered it is not possible to change the selected port.

Currently two of the unit parameters determine the default setup of the machine interface ports as follows:

Setup|UNIT|MENU 14:- Default Alg & Vid Rec Rdy
Setup|UNIT|MENU 16:- Default Chase Type

These two parameters are used to determine the default machine interface parameters when a new machine is connected to a port.


SR MENU MAP
USE STORE AND RECALL TO MOVE THROUGH SETUP 'S
STORE
RECALL
SETUP
ROOT MENU
0
1
2
UNIT SETUP
AUTO/ADR SETUP
INTERFACE SETUP
EXIT SETUP
INTERFACE SETUP
IFACE RECORD SETUP
IFACE CHASE SETUP
IFACE GENERAL SETUP
IFACE TYPE SETUP
3
4
SONY P2 SETUP
TASCAM SETUP
STUDER D820 SETUP
STUDER TLS4000 SETUP
AMPEX/ TIMELINE SETUP
UNIT SETUP
UNIT RECORD SETUP
UNIT CHASE SETUP
UNIT TIMECODE SETUP
UNIT GENERIC SETUP
UNIT JOG SETUP
AUTO/ADR SETUP
EDIT EXISTING LOOP LIST
EDIT NEW LOOP LIST
AUTO/ADR OPTION SETUP

UNIT Set-up

7.02 Unit Select Menu

```
MENU 02:- UNIT: Select Menu
0= Rec 1= Chase 2= Code 3= Generic 4=Jog
```

After selecting **0= Unit** from the ROOT menu you may then select the set-up section that you wish to look at and change.

0= Rec Record functions
1= Chase Chase/Synchroniser functions
2= Code Timecode Reader/Generator functions
3= Generic
4= Jog Jog/Shuttle

UNIT RECORD

7.03 Initial Record Command

```
MENU 03:- Initial Record Command:-
0= RECORD  1= RECORD+PLAY
```

From play, use either the **RECORD** key only or both **RECORD** and **PLAY** to enter record.

7.04 Check for Lock Status

```
MENU 04:- Check Lock Status?
0= Yes  1= No
```

0= Yes Check for system lock before record

1= No No check for system lock before record

7.05 Offset change when Master or Record Enabled

```
MENU 05:- Master/Rec Enab Offset change
0= Disabled  1= Enabled
```

0= Disabled Offset change on record enabled machines is disabled.

1= Enabled Offset change on record enabled machines is enabled

7.06 Virtual Record Tally

```
MENU 06:- Virtual Record Tally
0= Off  1= On
```

0= Off Record tally is on only if one or more machines are in Record.

1= On Record tally is ON if a record command has been sent or one or more machines are in Record.

7.07 Track Arm Keys

```
MENU 07:- Track Arm Keys
0=System, 1= Mcn, 2= Enabled 3= Macro
```

The track arm keys have four modes of operation as follows:

0= System
The track arming keys may access any combination of tracks and machines across the system. The Track Arming keys may be programmed individually (enter Mcn:Track followed by **[Shift]** followed by **[Store]** followed by Track arm key) or the tracks from the currently enabled machines may be mapped across the record keys by depressing **[Record]** and **[track arm key 1]**.

1= Mcn
The track arming keys are assigned to a single machine selected with the current selected machine.

2= Enabled
Track arming keys are assigned to a single machine that follows the last record enabled machine selected.

3= Macro
Track arming keys are assigned to a single machine selected by macro keys 104..107. It is not necssary to select this mode in the menu as it is selected when a macro key is depressed.

7.08 Record Track Arm

MENU 08:- Record Track Arm
0= Ready, 1= Ready/Record, 2= Record

This modifies the way in which track arming operates as follows:-

0= Ready
Track arming as per multitrack, track arm keys put tracks into ready on or ready of mode. Depressing the Record key or **Record & Play** keys will then send the command.

1= Ready/Record
Track arming as per video machine, track arm keys put tracks into ready if the machine is not in record, if the machine is in record then the track arm keys will put the selected tracks into record.

2= Record
Track arming as per film, track arm keys will put tracks into record directly, there is no ready state.

7.09 System Ready Length

MENU 09:- System Ready Length
0= 8 1= 16 2= 24 3= 32 4= 40 5= 48 6= 56 7=64

When Menu 07:- Track Arm Keys 1= System is selected this parameter sets the number of system ready's that may be accessed using the Bank key. Note: The display will change with the number of record ready switches fitted (8 in the example shown).

7.10 External Track Arming

MENU 10:- External Track Arming
Mast: 0= Rec Mcn, 1= System, 2= Off

When using the serial in port (Port A on a SR-3, or Port E/F on SR-24/32)

The record track arming command is sent to:-

0= Record Mcn
The currently selected Record Machine as displayed in the middle of the lower line

1= System
To the System Record Map, this may be mapped on a track by track basis across all the machines/tracks in the system.

2= Off
Track arming is ignored, dummy tallies are generated.

7.11 Auto Track Map

MENU 11:- Auto Track Map
0= One 1= All Mcn

Depressing **[Record]** and **[Ready 1]** together will map the current record enabled machines across the system record enables. This parameter selects to map only one record enabled machine or all record enabled machines.

7.12 Record In & Out Mode

MENU 12:- Constant Offset Mode
0= On 1= Off

The Record In, and Offset are interactive, by changing one then the others will change. This parameter determines how they interact.

Using the Equation **Master Position - Master Offset = Slave Position - Slave Offset** the following calculations will be made after each type of user entry.

Constant Offset
Changing the controlled machine's record in/out points will change machine in/out points in order to maintain a constant offset.

Constant Offset = On				
Controlled Machine	**Master In**	**Master Offset**	**Slave In**	**Slave Offset**
Master In	**Update**	N.C.	**Calc**	N.C.
Master Offset	N.C.	**Update**	**Calc**	N.C.
Slave In	**Calc**	N.C.	**Update**	N.C.
Slave Offset	N.C.	N.C.	**Calc**	**Update**

Editor
Changing the controlled machine's record in/out points will change machine offsets in order to maintain record in/out points.

Constant Offset = On				
Controlled Machine	**Master In**	**Master Offset**	**Slave In**	**Slave Offset**
Master In	**Update**	=0	N.C.	**Calc.1**
Master Offset	N.C.	**Update**	**Calc**	N.C.
Slave In Master In = 0	**Calc**	N.C.	**Update**	N.C.
Slave In	N.C.	N.C.	**Update**	**Calc.1**
Slave Out	N.C.	N.C.	**Calc.2**	**Calc.1**
Slave Offset	N.C.	N.C.	**Calc**	**Update**

N.C. = No Change, **Calc** = re-calculate, **Calc.1** = Calculate First, **Calc.2** = Calculate Second

7.13 Record-In & Record-Out Keys

MENU 13:- Rec-In & Rec-Out Keys
0= Mark & Store 1= Off 2= Store

The Function of the **[In]** and **[Out]** keys when used without Shift/Store/Recall/Trim active is modified by this parameter.

0= Mark & Store
Grab the current machine position and store as Record In or Out.

1= Off
No Action.

2= Store
Store the current keyboard display as record In or Out.

7.14 Default Analogue & Video Record Ready

MENU 14:- Default Alg & Vid Rec Rdy
0= Disable 1= A1-A2 2= A1-A2+V 3=Asmb

When a new video machine is connected to the system the initial setting of its Analogue, Video and Assemble Enable parameters will be configured dependant on this parameter.

To Insert edit on the timecode or cue tracks (A3, A4), select 3= Asmb

To Enable Crash Record select 3= Asmb

7.15 Auto-Capture Outpoint

MENU 15:- Auto Capture Out point
0= OFF 1= ON

When enabled, if in Auto-Record with the outpoint at 00:00:00:00 the record outpoint will be captured and saved as the record out point.

UNIT CHASE

7.17 Default Chase Type

```
MENU 17:- Default Chase Type
0= Master Code  1= RS422 only
```

When a new machine is connected the chase will be configured depending on the machine type.

0= Master Code Master code available, use the machines internal synchroniser where appropriate.
1= RS422 Only Master code not available always use the SR/MR synchroniser.

7.18 Wait for Slaves

```
MENU 18:- Wait For Slaves
0= No  1= Yes
```

0= No Play the master machine when play key depressed.

1= Yes When the play key is depressed stop the master machine and wait for all slaves to park before sending a play command to the master machine. This is indicated by the Play LED flashing.

7.19 Group Locates

```
MENU 19:- Group Locates
0= No  1= Yes
```

1= Yes All chasing machines will locate independently to the cue point after a locate command.

0= No All chasing machines will follow the master machine during a locate.

7.20 Master When in Play

```
MENU 20:- Master When in Play
0= Normal 1= Gen 2= A 3= B 4= C 5= D
```

This allows the user to specify a different master machine in Play to all other modes, for instance you may wish to use the Video as master in Stop and Jog but to have a audio machine as master when in play. Select the Play master in set-up, specify the non-play speed master in stop by using **Shift** followed by the selected master key as normal.

Note 1:
When exiting Record by using a transport key the selected master will not change but will change UNTIL the next command.

Note 2:
Ensure that the play master has a zero park offset.

Note 3:
On MR systems only a master capable port or the generator may be used as the play master. Any port may be used as the normal master.

7.21 Input Lock Tally (SR-3, SR24 Only)

```
MENU 21:- Input Lock Tally From
0= System 1= Master
```

Normally Set to System, Set to master if using with Avid or Pro-tools auto-edit

---

UNIT TIMECODE

7.23 System Timecode Standard

```
MENU 23:- Timecode Standard
0= 25  1= 30  2= 24  3= 29 DROP
```

In normal operation the system will setup the timecode standard automatically by reading the timecode standard of the master machine. Any machine with a different standard to the master machine will be indicated by adding a letter to indicate the standard at the end of the machine name (P=PAL, N=NTSC, D=Drop, F=Film). Note: Drop and Non-Drop codes may be mixed.

When the Generator is used as the master this parameter may be used to set the generator standard.

If the master machine reports its standard incorrectly thenthe user will have to tell the system the timecode standard of the machine. To do this first select the problem machine, enter setup and change **Setup|Iface|Generic|Menu 57: Timecode Standard** to 1= Use System. Once this parameter is set the Timecode standard may be set using **Setup|Unit|Generic|Menu 20: Timecode Standard**.

7.24 Film Speed

```
MENU 24:- Film Speed
0= 25  1= 30  2=24
```

When the Time/Feet macro key is enabled this is the assumed standard of the film footage when displayed and will be used for all conversions. The footage displayed is calculated as follows:-

Footage = (Timecode - Local Zero)*Film Speed/Timecode Standard

7.25 Timecode Standard

```
MENU 25:- Default Timecode Standard
0= Auto, 1= Use System
```

When a new machine is connected to the system the initial setting of its timecode standard source parameter is determined by this global parameter.

0= Auto
Use the timecode standard as reported by the machine

1= Use System
Use the System timecode Standard.

Default Setting 1= Use System.

7.26 Slave Tally Source

```
MENU 26:- Slave Tally Source
0= Master, 1= Slave, 2= Error, 3= Checksum
```

Normally set to 0, this parameter is used for test as follows:-

0= Master
When a Slave (Chase Enabled) machine is selected the Master transport tallies are used to display the current machine status (Play, Stop, <<, >>.

1= Slave
When a Slave (Chase Enabled) machine is selected the current machine transport tallies are used to display the current machine status (Play, Stop, <<, >>.

2= Error
The difference ind frames and tenths (+/- 1/10) between the timecode reader and the reported (RS422) position of the currently selected machine is displayed in the middle of the upper line of the display.

3= Checksum
Not yet implemented

7.27 TC Reader -> Serial Port

```
MENU 27:- TC Reader -> Port
0= OFF, 1= A, 2= B, 3= C, 4=D (, 5= E)
```

The timecode reader may be used for positional information in preference to the serial data, this menu selects which port uses the timecode reader data.

7.28 Reader Incremental and direction test

```
MENU 28:- Reader Incremental & Dir Test
0= ON, 1= OFF, 2= Gen Check
```

0= On, 1= OFF
This turns off both the incremental code test and the direction test on the LTC timecode reader. This may be useful chasing generated code e.g. from the MWA VFS film control system, or DA-88.

2= Gen Check
Timecode Generator check mode

The Timecode generator is the system master, as such the performance of the generator will determine the performance of the system. Connect the output of the generator to the timecode reader and enable this mode to perform a self check. Note that the generator is jammed from the master code, this will be updated once per 6 frames until capstan lock is reported for 1 second. The generator output will therefore also depend on the position reprted by the selected master.

The incremental code check is enabled and two checks are made on the timecode once per frame as follows:
a) Is the timecode raw input value 00:00:00:00? (reported problem)
b) Is there a code dropout when the master reports locked play?

When the Reader is selected the middle of the upper line of the display will show
0=nn E=mm
where
nn is a hexadecimal count of the number of frames for which the timecode value = 00:00:00:00
mm is a hexadecimal count of the number of drop-out frames

Note: To reset the two error counters counters enter and exit setup.

7.29 Generator User

```
MENU 29:- Generator User
0= Zero, 1= Feet, 2= Local
```

When a special Generator Chip is fittd the generator user bits may be set to be one of the following:-

0=Zero 00:00:00:00

1= Feet Footage calculated using the **Local Zero** and the film frame rate. This will be displayed as F0:ff:ff:xx where ff:ff = footage, xx= frames (16 frames=1 foot).

2= Local Local time calculated using the **Local Zero**, this will be displayed as b0:MM:SS:FF.

7.30 Macro Protection

MENU 30:- Macro Protection
0=Off 1= On, 2= Rd Usr 3= Rd Fac 4= Wr Usr

0= Off
Macro's can be changed from the keyboard.
System Track Arm Keys may be changed from the keyboard
Pre/Post Roll May be changed from the keyboard

1= On
Macro's cannot be changed from the keyboard
System Track Arm Keys cannot be changed from the keyboard
Pre/Post Roll cannot be changed from the keyboard

2= Rd Usr
On exit from Setup the unit will read User Setup from EEPROM, the macro protection will default to 1= On. This is activated on leaving setup.

3= Rd Factory
On exit from Setup the unit will read the Read Factory Setup from EPROM, the macro protection will default to 1= On. This is activated on leaving setup.

4= Wr Usr
Setup the unit to work in your prefered manner then select to write current setup to EEPROM, the macro protection will default to 1= On. This is activated on leaving setup and may take up to 20 seconds to compleat the write.

There are three setups possile
1) Current: destryed when Read User or Read Factory are selected or a Hard Reset command.
2) User: selected by Read User or a hard reset command, setup the unit to work in the way that you want, then write to the eeprom by selecting 4= Wr Usr and exiting setup.
3) Factory: selected by Read Factory

The following table shows how the memory's are initialised after a power-up reset or a hard reset.

Action	Unit Setup	Macro's	System Track Map	Machine Parameters	Temp Stores
Power-On or Reset Button	Battery backed RAM				
Hard Reset	EEprom (User)			Eprom	Cleared

7.301 Installing New Software

When new software is installed it is necessary to initialise user setup in the EEPROM as follows:-
i) Select the Macro protection Menu **Setup | Root | Unit | Generic: menu 30:- Macro Protection**
ii) Depress the **3** key to select **3= Rd Fac**.
iii) Depress the **Setup** key twice to exit setup.
iv) Depress the **Setup** key to Re-enter the macro protection menu, this should now be seletced to **1= On.**
v) Depress the **4** key to select **4= Wr Usr**.
vi) Depress the **Setup** key twice to exit setup.

7.31 Serial A type / Serial E type

SR3/4

MENU 31:- Serial A type
0= Output (SR-4), 1= Input (SR-3)

SR24/SR32

MENU 31:- Serial E type
0= Output (Controller), 1= Input (Device)

Serial Port A on a SR-4 or Serial port E on a SR-24 may be configured as an Input from a controlling device or an output to a controlled device.

Note 1. Serial A is connected as an input on the SR-3 and as an output on the SR-4 and SR-24, This is set by links inside the unit.

Note 2. Serial E is connected as an input on the SR-24.

7.32 Locate with / without Preroll

MENU 32:- Locate with Pre-Roll
0= Yes, 1= No

This setting determines the behaviour of the Locate function when Auto-Record/Rehearse are not enabled as follows:-

0= Yes
To locate with Pre-Roll: **[Locate]**
To Locate without pre-roll: **[Shift]** followed by **[Locate]**

1= No
To locate with Pre-Roll: **[Shift]** followed by **[Locate]**
To Locate without pre-roll: **[Locate]**

Note: Auto-Record/Rehearse always set to 0= Yes, locate will always locate pre-roll before the Record In point and Shift followed by locate will locate the Record in Point

The **Pre-Roll** memory may be accessed using **[Store]** or **[Recall]** followed by **[Reverse Play]**.

7.33 GP Outputs

MENU 33:- GP Outputs 4, 5, 6
0=GP, 1=Rec, 2=Tal, 3=Mcn, 4=Mas, 5=Rdr, 6=ADR

The SR has only 6 GP Outputs in total. The outputs are TTL and active high. The functions of GP Outputs 4,5,6 are determined by this setting:-

0=GP
Scratch pad stores "Shift-1", "Shift-2", "Shift-3" are used as timecode coincidence detectors, the GP Outputs are active when the master timecode is the same as the stored value. e.g. to fire GP Output 4 at 01:00:00:00, enter 01:00:00:00 to the keyboard display then [**Store**] followed by [**Shift**] followed [**1**]

1=Rec
GP Output 4 (pin 6): RECORD ON High for one frame at **'Rec Adv'** before the record in point.
GP Output 5 (pin 19): RECORD OFF High for one frame at **'Rec Adv'** before the record out point.
GP Output 6 (pin 7) : Streamer Trigger High for one frame at a preset time (Nominal 3 seconds,

scratch pad store"Shift-9" is used to set the streamer advance) before the Record In point or before Scratch pad store "9".

[Recall] or **[Store]** followed by **[Record]** will access the **Rec Adv** memory.
[Recall] or **[Store]** followed by **[Shift]** followed by **[9]** will access the **Streamer Advance** memory.

2=Tal
GP Outputs 4,5,6 are used with a parallel remote control as encoded tallies.

3=Mcn
GP Outputs 4,5,6 are used as encoded outputs to indicate the current selected Port.
Port A = 000, Port B = 001, Port C = 010, Port D = 011

4=Mas
GP Outputs 4,5,6 are used as encode outputs to indicate the current selected Master Port.
Port A = 000, Port B = 001, Port C = 010, Port D = 011

5=Rdr
GP Outputs 4,5,6 are used as encoded machine control outputs when the **Reader** is selected. For example when used with a Telecine.
Stop = 000, Play = 001, Rvs Play = 010, Fast Fwd = 011, Fast Rvs = 100, Rvs Crawl = 101, Fwd Crawl = 110

6=ADR
GP Output 4 (pin 6): Red Light High during pre-roll and record.
GP Output 5 (pin 19): Beep High for one frame three times at 0.6 second intervals before the record in point.
GP Output 6 (pin 7) : Streamer Trigger High for one frame at a preset time (Nominal 3 seconds, scratch pad store"Shift-9" is used to set the streamer advance) before the Record In point or before Scratch pad store "9".

[Recall] or **[Store]** followed by **[Record]** will access the **Rec Adv** memory.
[Recall] or **[Store]** followed by **[Shift]** followed by **[9]** will access the **Streamer Advance** memory.

7.34 GP Output 3

MENU 34:- GP Output 3
0= Mute PL, 1= Mute PL+R 2= Red Light

0= Mute PL
Mute except when in Locked Play

1= Mute PL+R
Mute except when in Locked Play or Reverse play

2= Red Light
Use GP3 as a Red light output, see Macro No.

7.35 Remote FWD/RWD Comands to Video Machine

MENU 34:- Rmt FWD/RWD Cmds to Video Mcn
0= Normal, 1= Convert to Shuttle

Use if Remote Fwd/Rwd commands caue video to lose picture.

7.36 Enable Auto-In when NOT Play

MENU 34:- Enable AAuto-in ehrn NOT Play
0= No, 1= Yes

When enabled all record enabled chanels will switch to input monitor when not in Play (assuming machine accepts command).

UNIT JOG

7.37 Jog Response

```
MENU 37:- Jog Response
0= 1= 2= 3= 4= 5= 6= 7= 8= 9=
```

Increasing the number will increase the speed of the machine relative to the speed with which the jog wheel is turned.

7.38 Jog Wheel

```
MENU 38:- Jog Wheel
0= On Cmd 1= Always, 2= Test
```

0= On Cmd
The Jog or Shuttle key have to be depressed before the jog wheel may be used.

1= Always
The Jog wheel is always active, the mode when turned is the same as the last mode selected by the jog or shuttle keys.

2= Test
Used to check both the keyboard and jog wheel, when active the keyboard entry display will show the number of the last key depressed. The jog wheel is shown as three key depressions as follows:-
00:3A:NN:SS
Where 3A = Jog Wheel, NN = Direction and number of pulses, SS= Speed

The jog wheel will send 3A:00:00 when stopped.

IFACE MENU

The IFACE Menu is applied to each serial port separately, first select the serial port you wish to use, then enable setup.

7.39 Interface Parameter

```
MENU 39:- IFACE: Select Menu
0= Record, 1= Chase, 2= General, 3= Type
```

IFACE RECORD

7.40 Record Tracks

```
MENU 40:- Record Tracks
0=Off 1=Alg 2=8 3=16 4=24 5=32 6=40 7=48
```

The record command sent to the machine depends on the number of digital channels as follows:-
0= Off
No record command sent to machine

1=Alg
Analogue 1-4, Video, and Assemble only

2=8

Analogue 1-4, Video, Assemble and up to 8 Digital Record channels.

7.41 Analogue and Video Record Ready

```
MENU 41:- Analogue and Video Rec Rdy
0= Disable  1= A1-A2  2= A1-A2+V  3=Asmb
```

To crash record or insert edit on the Timecode or Cue tracks (A3 & A4) select 3=Asmb.

7.42 Record Tally Source

```
MENU 42:- Record Tally
0= REC or EDIT, 1= Record, 2= Edit
```

Some non-edit machines give a permanent Edit tally (for example the VO9600), if this is the case select the appropriate tally source to disable.

7.43 Record Command Type

```
MENU 43:- Record Command
0= EDIT ON/OFF, 1= RECORD / PLAY
```

Some Non-Edit machines will only accept a record command and not an Edit command.

7.44 Command Reinforce

```
MENU 44:- Command Reinforce
0= Off 1= Offset 2= Track Arm 3= Both
```

Offset
There is no Sony command to request the current offset setting from the machine, by reinforcing the offset command once per second, the user can ensure that the current setting is correct.

Track Arm/Record Ready
Many machines do not report changes made on the machine, to ensure the correct setting with these machines enable Track Arm reinforce.

7.45 Record Advance

```
MENU 45:- Record Advance
0= 1= 2= 3= 4= 5= 6= 7= 8= 9= Frames
```

This parameter sets the individual machine record advance for use in Auto or instant record. Adjust this parameter to set the actual record in point using auto record.

7.46 Record Tallies

```
MENU 46:- Track Ready Tallies
0= Valid 1= Disp 2= RdyStat 3= Stat 4= NV
```

0= Valid Valid Tallies from Machine, use Tallies to display and generate new commands.

1= Disp Use tallies to display only

2= RdyStat Use Tallies from "Request Ready Status" command only.

3= Stat Use Tallies from "Request Status" command only.

4=NV Tallies Not valid use last track ready command as tally.

The SR-4 is set-up to give true record tallies to the user, when the machine gives true tallies this works very well, unfortunately not all machines give true tallies, in this case the only solution is to use the SR-4 commands to generate dummy tallies.

7.47 Send Record In and Record Out

```
MENU 47:- Send Rec In & Out to Mcn
0= No 1= Yes
```

IFACE CHASE

7.49 Chase Command Type

```
MENU 49:- Chase Command Type
0= CMD 1= P 2= PC  Video 3= - 4= + 5= -+
```

Using the Machine's internal Synchroniser

0= CMD
Issue chase command to machine

1= P
Issue Play command to machine

2= PC
Issue Play command to machine, followed by lock once has been achieved

Video Type lockup, use parameters in section 7.027 - 7.031
Using the SR-4 Synchroniser

3= -
Lockup one frame behind and then Accelerate

4= +
Lockup one frame ahead and then Decelerate

5= -+
Lockup from behind or ahead with acceleration or deceleration

7.50 Start Advance

```
MENU 50:- Start Advance
0= 1= 2= 3= 4= 5= 6= 7= 8= 9= Frames
```

Only valid when used with Park Offset, to set this parameter select chase type 1, and adjust for 0 or -1 frame offset from stop to play (Chase type 3), or 0 or 1 frame offset (Chase type 4), +/-1 frame offset (Chase type 5).

7.51 Park Offset

```
MENU 51:- Park Offset * 5 Frms
0= 1= 2= 3= 4= 5= 6= 7= 8= 9=
```

The park offset is not normally used for video machines. A park offset will allow more consistent starts and allow time for the machine to lace.

7.52 Wait for Code to Stabilise

```
MENU 52:- Wait for Code to Stabilise
0= 1= 2= 3= 4= 5= 6= 7= 8= 9= * 3 Frames
```

After the initial play command is issued the SR-4 will wait for the specified number of frames before attempting to servo the slave machine. This parameter is useful on machines (for instance the DA-88) which give incorrect positional information during start-up.

7.53 Max Slew Speed

```
MENU 53:- Max Slew Speed
0= 1= 2= 3= 4= 5= 6= 7= 8= 9= Max
```

This parameter limits the maximum speed of the machine when locking. When locking the lock algorithm determines the speed of the machine dependant on the distance to lock, the father away from lock the faster or slower the machine. Some servo's lose stability at high speeds, hard disk machines may not be able to output audio above a certain speed.

7.54 Play Command Position Jump

```
MENU 54:- Play from +-1
0= No 1= Yes
```

Some machines (Protools) jump by a frame when switching from Vari-play to play, this parameter allows you to program this. First set the slew type to approach from ahead or behind the master as required and then enable this option.

7.55 Use Play tally as Lock Tally

```
MENU 55:- Report Lock on
0= Servo Lock 1= Play Tally
```

A number of machines do not support a servo lock tally (MX2424 as a master, Doremi without video syncs) This parameter allows you to select the play tally as a lock tally.

7.56 Select Acceptable Error Window

```
MENU 56:- Select Acceptable Error
0= None 1= 2= 3= 4= 5= 6= 7= 8= 9= Frms
```

After the initial lock and 1 second of locked play no action will be taken unless the error exceeds the acceptable error window. this should is normally set at one frame to allow for occasional jitter. This parameter allows the playback from machines where the timecode has been recorded incorrectly.

7.57 Serial Position Request

```
MENU 57:- Serial Position Request
0= Mid, 1= Start, 2= Mid-O, 3= Start-O
```

This parameter controls the timing of the serial communications between the SR/MR and the controlled

machine as follows:-

0= Mid
Position request sent in mid frame, Status request sent at start of frame.

1= Start
Position request sent at start of frame, Status request sent in Mid frame.
2= Mid-O
Position Request and Status request send in middle of alternate frames.

3= Start-O
Position Request and Status request send at the start of alternate frames.

7.58 Slew Command Type

```
MENU 58:- Slew Command
0= Vari-P 1= Shutt 2= Jog 3= PP 4= V->PP
```

Select the Slew command type, normally 0= Vari-P
0= Vari-P Use variplay command followed by play
1= Shutt Use Shuttle command followed by play
2= Jog Use jog command followed by play
3= PP Use Programable Play command
4= V->PP For variplay for initial lock and Programable Play for subsequent attempts.

7.59 Reverse Slew Command

```
MENU 59:- Reverse Slew Command
0=Vary-P, 1= Shutt, 2= Jog
```

Select the command to use for reverse play synchronisation, the best is Vari-Play, but not all machines implement this command or allow more than *1 reverse play. Check the setup of your video machine!

7.60 Locate Speed

```
MENU 50:- Locate Speed
0= TLESS 1= FAST 2= MED 3= SLOW 4= VSLOW
```

0= Tapeless Instant Hard Disk access

RTZ
This parameter sets the RTZ window when rewinding as follows

0=	TLESS	30 frames
1=	FAST	100 frames
2=	MED	300 frames
3=	SLOW	600 frames
4=	VSLOW	1000 frames

Chasing a Master at Play Speed
The Locate speed determines whether a slave can catch up with a moving master, as the slave gets closer to the master its locate speed will decrease, once the slave locate velocity is at play speed it can never catch up with the master.

Set this parameter when chasing a master in play from behind, start from 0 and increase until the slave catches up with the master and enters play.

7.61 Locate Type

MENU 61:- Locate Type
0= Locate, 1= Loc+Wind, 2= Shuttle+Wind

0= Locate Locate by issuing Locate command

1= Loc+Wind If distance greater than 1 minute then Wind, when distance less than 1 minute then locate to point.

2= Shuttle+wind If distance greater than then wind, when distance less than 1 minute then shuttle to point.

7.62 Sub-Frame Offsets

MENU 62:- Subframe Offset
0= None 1= One Byte 2= Two Byte

This parameter determines the type of sub-frame command sent to the machine and is only used on audio machines when using there own internal synchroniser or an external synchroniser.

7.64 Machine Type

MENU 64:- Machine Type
0= VTR 1= Dig-VTR 2= ATR 3= DAT1 4= DAT2

The commands that may be sent to machines depends on the type of machine as follows:-

Command Type	0=Video	1=Dat	2=Dat	3= Digital Audio
ID/PNO	No	Yes	Yes	No
Set timecode Standard	No	Yes	Yes	Yes

The difference between DAT-1 and DAT-2 is as follows:-

DAT-1
A Stereo DAT with stereo record only.

DAT-2
A two-track DAT with individual channel records.

7.65 Position Source

MENU 65:- Position
0= LTC 1= VITC 2= L+V 3= TIM-1 4=L+V+T

Note: different order on earlier software.

7.66 Select Pause/Stop Command

MENU 66:- Pause/Stop Command
0= Normal, 1= Stop, 2= Jog @ Zero

Some video machines will unlace if a **STOP** command is sent, for these machine it is possible to send a Shuttle at Zero Velocity which will stop the VTR in a laced mode.

7.67 Timecode Standard Source

MENU 67:- Timecode Standard
0= Auto 1= Use System

0= Auto Use Standard as reported by machine

1= Use System Use Master Standard as defined by the Master machine or in Unit Setup.

7.68 Command Enable

MENU 68:- Command Enable
0= All 1= Status Request 2= None

0= All
All commands from SR Remote are sent to the controlled machine.

1= Status Request

Status and Position Requests only are sent to the controlled machine

2= None
No commands or data requests are sent to the controlled machine

7,69 Auto Unlace

MENU 69:- Auto Unlace 0= Enabled, 1= Disabled

This parabeter allows you to disable the auto-ulace and rely on the machines unlace function.

7.70 Colour Framing

MENU 70:- Colour Framing 0= Off, 1= 4 Field, 2= 8 Field

This Parameter determines the colour framing of the machine when in Play and a Slave. At all other times the Colour framing is determined by the machine Setting (switch or menu).

The normal setting for audio applications is **0= Off**. Any other setting can cause sync problems.

7.71 R3422 : Timecode Offset

MENU 71:- RS422 : Timecode Offset 0= -2frm 1= -1frm 2= 0frm 3=1frm 4= 2frm

Some Machines can have an offset between the RS422 and Timecode when in play, this parameter allows you to specify a correction factor to adjust for this.

Note: The correction factor is not used when the machine is not playing.

To check the correct value for this parameter

1) Select Root | 0=Unit | 2= Code | Menu 25: Slave Tally Source 2= Error. This will enable the error display in frames and 1/10's in the centre of the upper line.

2) Connect the timecode output from the machine to the timecode input on the timecode and GPI In/Out on the SR/MR controller.

3) Select the machine port required, if using a MR system and the selected machine is connected to an MR-3 select the machine as a Master for better positional information.

4) Play the machine and check the error. Changing this parameter will directly adjust the error displayed

---

IFACE PROTOCOL

7.73 Interface Protocol

MENU 73:- Select Protocol 0= Sony 1= 88 2= 820 3=TLS 4= TL 5=AK 6=DVD

Each RS422 port supports a number of protocols, the standard protocol is Sony P2, other protocols are available as options. If fitted to the software the name will appear in the display.

If the protocol your require is not listed on your unit then contact your agent or CB Electronics to purchase a protocol upgrade.

7.77 AK ES 1.11 Machine Type

```
MENU 77:- ES 1.11 Machine Type
0= ES1  1= 3324
```

TLS PROTOCOL

```
MENU 78:- Playback Head
0= REPRO  1= SYNC
```

```
MENU 79:- Machine Type
0= AUTO 1= 807 2= 810 3= 820-2t 4= A827
```

ADR/AUTO MENU

7.80 Edit ADR Loops

```
MENU 80:- Edit ADR Loops
0= Edit ADR List  1= NEW ADR List  2= Options
```

0= Edit ADR List Edit Existing List

1= NEW ADR List Erase current list and start new list

2= Options Access ADR Options

7.83 Auto-Rec, Rehearse, Review

```
MENU 83:- Auto-Rec, Rehearse
0= Mode 1= Cmd  2= Editor
```

The Auto-Record and Rehearse keys may be one shot Commands (1= Cmd ,2= Editor) or modes (0= Mode) that change the operation of the unit. Loop operation is only available when the mode is selected.

0= Mode
Select Auto, Rehearse, Manual, Review Mode by depressing Mode key.
Leave Mode by depressing illuminated Mode key
Whilst mode is active the Locate command will locate pre-roll before record in. Record On and Record off commands are global, the record advance may be changed by entering required record advance followed by **Store** followed by **Record**.

1= Cmd
Perform an auto edit, rehearse, review, manual by depressing the selected command key. The system will locate record in and perform edit/rehearse. Whist active the selected command LED will be illuminated, Once finished the LED will extinguish. Record On and Off commands are performed individually by each serial port, the record advance for each machine may be individually adjusted using Root | Iface | Record | Menu 40:- Record Advance.

2= Editor
This is the same as 1= Cmd except that, all group enabled machines are selected and the system then performs an auto edit/Review. Once the edit is finished the machines are released and become individual again.

7.84 At end of Auto-Record

MENU 84:- At end of Auto-Record:- 0= Redo 1= Stop 2= In 3=Review 4= Play

When the auto record out is activated this parameter selects what the system will do next.

7.85 ADR Backup Machine

MENU 85:- ADR Backup Machine 0= NONE, 1= A 2= B 3= C 4= D (5=E)

When either **Auto-Record** or **Manual-Record** mode are enabled a DAT machine may be used as a backup recorder on the specified serial port.

Note: Once a backup dat machine is enabled an extra delay of 70 frames is added to allow for the lockup and PNO record of the DAT. If the pre-roll is to short the system will not go into record even if locked.

8.00 RESET

8.01 POWER UP RESET
When switched on the unit will reset, On reset the memory is not completely cleared since the current film position, timecode offset, and configuration are battery backed. If a memory backup failure is detected the unit will reset the whole memory.

8.02 FRONT PANEL RESET

When servicing the unit it may be required to reset the unit without switching off the power. This is the same as a power-up reset and does not clear any memories. To do use a pen or small implement to depress the switch located:-	
SR-4/SR-3/SR-2X	Between [**9**] and [**A**] on the front
SR-24/SR-24A	Above [**B**] and [**C**]
SR-32	

8.03 HARD RESET

If it is required to reset the battery backed memory manually a hard reset may be initiated from the front panel by simultaneous depression of the following two keys:-	
SR-4/SR-3/SR-2X	[**<<**] and [**Locate**]
SR-24/SR24A/DFC/SR-32	[**A**] and [**Jog**]

If the front panel software is not working correctly the unit will only reset if the keys are depressed during the power up sequence, WAIT UNTIL ALL THE LED's ILLUMINATE, then depress the Hard Reset key combination.

8.04 MANUAL HARD RESET

The front panel hard reset is only possible if the front panel software is running correctly. If all else fails switch off the power, open the unit, and unplug the RAM chip (U16).This will disconnect the memory from the backup battery. Replace the RAM chip, and power up the unit.

9.00 RECORD TRACK MAPPING

The mapping of the record track arming keys is determined by the setting of menu 07 as follows:-

```
MENU 07:- Track Arm Keys
0= System, 1= Follow Mcn, 2= Record Mcn
```

The track arm keys have three modes of operation as follows:

0= System
The track arming keys may access any combination of tracks and machines across the system. The Track Arming keys may be programmed individually (enter Mcn:Track followed by **[Shift]** followed by **[Store]** followed by Track arm key) or the tracks from the currently enabled machines may be mapped across the record keys by depressing **[Record]** and **[track arm key 1]**.

1= Follow Mcn
The track arming keys follow the current selected machine.

2= Record Mcn
Track arming keys will follow the last selected record enabled machine.

9.01 SR-24 Custom Mapping

The standard mapping after a hard reset the track mapping on the SR-24 is as follows:-

SR-24 tracks 1..8	Machine B tracks 1..8
SR-24 tracks 9-16	Machine C tracks 1..8
SR-24 tracks 17-24	Machine D tracks 1..8

This may be set to a user specification. This is set as the factory default setting in the ROM, this may be ordered from your agent or CB Electronics. The Default Macro key map should be specified at the same time.

9.02 SR-24 Auto Track Mapping

Unlike the SR-4 that has 8 track arming keys and a bank key the SR-24 has 24 track arming keys and an optional bank key. The SR-4 is normally set so that the track arming keys follow the currently selected machine, however on the SR-24 this is less appropriate. Consider the situation with three eight track record machines, when the operator would like to track arm any of the three machines. In this situation an intelligent track-arming algorithm is necessary.

To use first select System track arming mode from the menu (**Set-up | UNIT | RECORD | Menu 07:- Track Arm Keys**).

To map the enabled machines/tracks check that the selected machine is stopped then depress **[Record]** and **[Track Arm Key 1]** simultaneously. The tracks from machines that are connected, not in Local, and Record enabled are mapped across the track arming keys.. If **Root | Unit | Auto track Map** is set to **0= One** then the current selected record machine will be mapped across the system record keys, if set to **1= All Mcn** the all currently record enabled machines will be mapped across the system record keys.

To restore the default firmware track mapping depress both **[Shift]** and **[Track Arm Key 1]**. The eprom default track mapping may be programmed to your specification. The standard is machine b tracks 1-8, machine C tracks 1-8, and machine D tracks 1-8.

9.03 Checking the current track map

The Track mapped to Record enable 1 is normally displayed in the centre position of the lower display, see section **2.07**.

To check the current track map for any key depress the **[Recall]** key followed by the selected track arm key. The keyboard display should show:-

```
Mcn:Trk 00:00:02:01
```

Where the Seconds show the machine number (02) and the frames show the track number (01),

9.04 Track Mapping Keys

If required the following keys/macros may be used to change the mapping of the Track Arm Keys as follows:-

Bank Change either system or machine Track Arm Bank (Macro-65)

The following keys change the settings of Setup|Root|Unit|Record|Menu 07:-Track Arm Keys.

Macro 185 Custom1 Select System Tracks 1..32 to track map keys, System tracks may be individually programmed.

Macro 186 Custom2 Select System Tracks 33..64 to track map keys, System tracks may be individually programmed.

Macro 187 McnMap1 Map tracks sequentially from Mcn?:Trk? the number of machines/tracks mapped is dependant on the setting of Setup|Unit|Record|Menu 11:- Auto Track Map. To set the Mcn:Trk for Ready-1, enter the Machine followed by the track then **Store** followed by **McnMap1**.

Macro 188 McnMap2 Map tracks sequentially from Mcn?:Trk? the number of machines/tracks mapped is dependant on the setting of Setup|Unit|Record|Menu 11:- Auto Track Map. To set the Mcn:Trk for Ready-1, enter the Machine followed by the track then **Store** followed by **McnMap2**.

Macro 87 Follow Mcn Follow Selected Machine.

Macro 88 Follow Rec Mcn Follow Record Machine.

An Example using three keys to control the track mapping over 24 track arm keys in a 6 machine MR system.

Key1:McnMap1 Used to select Machine D tracks 1-24 Machine 'D' is specified in the Custom Factory Setup but may be changed to any Port by selecting the port required then use **[Shift]** followed by the **[McnMap]** key. The track mapping may be started at any combination of machine and track by entering the desired machine and track and using **[Shift]** followed by **[Store]** followed by the **[McnMap]** key

Key2:Custom1 Track Arm keys 1..8 = Machine C (MFX-48) tracks 1..8
Track Arm keys 9..16 = Machine E (DA-98) tracks 1..8
Track Arm keys 17..20 = Machine B (Digi-Beta) Tracks 1..4
Track Arm key 24 = Machine F (PCM7030 DAT) Analog 1&2

The custom track mapping was set in the Custom Factory setup, it may be changed for each individual track arm key.

Key3: Follow Enable

The keys for this example are labelled as follows:-